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SURGICAL VISION

CHAIRMAN'S ADDRESS

HUBERT A. ROYSTER, M.D.

RALEIGH, N. C.

"The present is in every age merely the shifting point at which past and future meet and we can have no quarrel with either." In these words of Havelock Ellis there is contained the germ of an inspiration which should find lodgment and growth in the consciousness of all who are deeply concerned with their work in life. Therein is expressed the true conception of what men call vision. This means literally seeing backward, seeing now and seeing forward, and then harmonizing the relations of each objective. Just as in ocular vision one does not see with the eye but with the brain, so in the larger realm vision depends on the higher virtues of character, philosophy, discernment and understanding.

For the surgeon, vision is a vital requirement. The ability to see behind, through and beyond the problems presented to him is the true test of his mastery of his profession. Unless he knows something of what has gone before him, he knows very little of what is going on around him, and can hardly visualize what may come to him. Preparation, training and experience, the necessary factors in the surgeon's equipment, are but part and parcel of a refining process, pointing to that perfection of vision which is wrapped up in knowledge of the past, realization of the present and foresight of the future.

The study of surgical history furnishes a bountiful background for the development of a career, and, as history is largely biography, an intimate acquaintance with the worthies who have gone before brings a satisfying sense of struggle that denotes success. Not otherwise could one learn that often the true is not new and the new is not true. The evolution of surgery has had its ups and downs, slow at times, rapid at others, and even recently accelerated developments will soon become ancient history. Some of those who predicted that there were no more surgical worlds to conquer lived to see their prophecies nullified. Past performances are stepping stones, not the journey's end. Likewise, the literature of surgery, especially that in periodical form, yields its own reward to those eager students who delve into its pages. Familiarity with records of the past confers an aristocracy on the possessors of such knowledge. It may be humiliating to present what is regarded as a rare occurrence only to be reminded that several scores of years before many similar instances had been published. This is pointed out to place no damper on the reporting of independent observations as additions to the surgical literature, but only to afford encouragement toward a broader vision. Intensive perusal of contemporaneous surgical literature reveals references to older records and impels a desire for closer study.

In the glowing present surgical vision beholds the actual patient and bestows on him all the resources of head, heart and hand. What has been put in previously as preparation and training comes out, no more, no less, as the art of discrimination, the capacity to apply general knowledge to a particular situation. Here is occasion for the deepest insight, a challenge for thought, for decision, for action. The surgeon is his own supreme court, in session every day, and unless he is imbued with "the heavenly vision," a combination of tradition, courage and inspiration, he will fail in his great adventure. The readiness which says, now and here, that this or that must be done is born of a sound sanction which selects the consciously right and rejects the obviously wrong, irrespective of rule or theory, and devotes an educated judgment to the immediate problem. Mr. Kipling well said to the Royal College of Surgeons: "Your dread art demands the instant impersonal vision which in one breath, one beat of the pulse, can automatically dismiss every preconceived idea and impression, and as automatically recognize, accept and overcome whatever of new and unsuspected menace may have slid into the light beneath your steadfast hand." The deadly taint of standardization furnishes no shrine for worship in surgery. It is fatal to a liberal vision, founded on a life's labor and a single-minded adherence to truth.

When the surgeon brings his vision to bear on the future he must needs think in terms of experiment and research. No advancement in science is attainable except along the path of trial and error up to fact. Surgery dare not boast of its practical accomplishments as belonging narrowly to its own sphere, but must give credit to the auxiliary sciences the researches of which preceded and still attend its forward strides. Without Pasteur, the chemist, there could have been no Lister, the surgeon. One speaks magnificently of practical results, but behind them stands an array of theories and experiments which seemed at first of small importance, thought out by workers who had the bravery to believe in their final utility. When Faraday was asked by an inquirer observing his experiments in magnetism, "What is the use of it all?" the famous scientist replied, "Will you tell me the use of a newborn child?" There are definite problems continually arising in surgery which are to be solved by surgeons themselves, but always in the spirit of science and with

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a clear vision of reality. John Galsworthy has expressed this forcibly: "Only one who experiments out of the sheer necessities of his theme will create that which will last. They who experiment from a mere craving for novelty, capture for a season the intelligence of the weaker brother, and attract the butterflies of the day; but their works fade like dew off the grass when the sun shines."

No one could for a moment justly disparage the value of experimentation. It has led to innumerable discoveries, to the correction of serious inaccuracies, to the saving of lives. Yet certain types of research have gone up blind alleys for lack of purpose, for lack of a compelling aim, for lack of vision. There is wanted as much wisdom to see the irresistible demand for instituting a research problem as there is to conduct the experiments and interpret their findings. The fetish of statistics has done much to confuse the pictures presented in surgical research. A parade of animal experiments, a row of figures and tables, together with elaborate conclusions, may mean a great deal or nothing at all, subject to the character, the environment and the material of the individual investigator, and, further, to the proper analysis of reported statistics themselves. May not one intelligent man's conscientious opinion be of parallel value? May not vision be needed as a control factor in experiment? We hug to our bosoms the research worker in surgery who is possessed by an idea, whether it be simply a hypothesis or an actual issue, and who follows it through with unerring faith to the end, but we deprecate the trumping up of a meaningless problem only to exploit a theme which had better remain unsung, or to prove a point which needed no proof. Let us recall the earliest announcement of Hippocrates concerning surgical research: "phenomena first, then judgment, then general propositions, then practical knowledge and craft."

If, then, surgical vision derives its impulse from a conception of past, present and future, there is room for its fulfilment in surgical practice. There are three essential ingredients in the make-up of the surgeon—the mental, the moral and the mechanical. The first has to do with knowledge, the second with judgment and the third with skill. In such order they provide the why, the whether and the how of every surgical question. A well rounded surgeon recognizes this trinity of attributes and happy indeed is he—and rare in the extreme—who may possess them all in equal degree.

The mental vision that brings resource, common sense and clear thinking to bear on finding the cause, designating the disease and relieving the patient represents the surgeon's primary investment, enveloping his every thought and deed like a well fitting garment. The mind must conceive the act and mature it in the light of independent intelligence founded on valid principles. Let this be the guiding motive in the surgeon's career: to do his own thinking, his own operating and his own deciding. After all, a surgical operation is a one-man job. Team work is essential; assistants are required, but the operating surgeon in the individual case is the responsible actor; his mind carries through; other minds are merely adjuncts. Only one can do the operation; the others assist the operator and fall in with his plan. The newspapers may still report that "Doctors Brown, Jones and Robinson operated on Mrs. Smith yesterday," but we know that there was one operator, with two assistants performing their cooperative offices; otherwise, there was a syndicated enterprise with no leading spirit. The surgeon's mind must be open to suggestions, but his own ripened resourcefulness may afford him the wisest advice. When there is no surgical vision, the patients perish.

The moral attitude of the surgeon tells tremendously in his work. It supplies the qualities of judgment, accuracy and honesty. Surgical judgment has been the topic of many discourses, and different views have been held in regard to its significance. It is inherently a moral manifestation, for it has to do with a righteous intent to choose the wise course regardless of everything but the patient's well-being. Since at any moment during the consideration of a particular case the surgeon may be called on to exercise his conclusive judgment, either deliberately or instantly, and since serious consequences usually are involved in his decision, it behooves him to keep a keen edge on his surgical conscience, leaving out all matters of selfish interest or the importunities of the patient and his family. Thus is judgment displayed by the surgeon in his most exalted capacity.

Accuracy in the surgical scene stands for an ardent yearning to do the right thing in the right way at the right time. To be accurate is to care above everything for the truth in thought, action and attitude. "To think free is great; to think right is greater." Honesty of intellect is probably the profoundest type of honesty, because it is inclusive and supplies the basis for self-control, the finest of all human virtues. The surgeon who is honest with himself cannot acknowledge slipshod counsel, advise unnecessary operations or forget the person of his patient. No unworthy sentiment or mercenary desire can enter the sensorium of the honest surgeon, for he hears the Spirit of Science calling: "I am what is, what shall be, what hath been. My veil hath been disclosed by none. The fruit which I have brought forth is this: the sun is born." But greed and dishonesty will destroy every one of our visions. Our hope is to see, to know, to feel the light.

What may be called the mechanical side of surgery is not without its need of an understanding vision. Surgery is not wholly mechanical. Surely it is not all of surgery to cut, nor all of operating to perform the operation. It is true that whether a surgical procedure is topical, manipulative or operative, it necessarily requires some knowledge of mechanics; however, this may be acquired in sufficient degree by the average person in his training until the processes become automatic, allowing occasion for the development of attainments higher than the inanimate practices of the ordinary mechanic. The components of the mechanical aspect of surgery which must be mastered before skill in the art can be attained—and they are the accomplishments of every other artist—are coordination, precision and timing. Proper coordination between brain and fingers is the surgeon's peculiar endowment. The faultless response of hand and head makes for the consummation of what is called surgical technic, which is not altogether mere mechanics. Now vision plays its hand, telling what comes next, giving that sense of familiarity which breeds repose. Precision, the practice of exactness, lends to the art of surgery a feeling of security, which should anticipate the happening of the unexpected, and of deliberation, which should not be translated into delay. Being precise implies doing as much as, and no more than, indications admit and therein lies a lesson for surgeons who would win success. The special genius of timing is a gift of choice

excellence, the faculty of adjusting coordination with precision so as to complete the procedure safely, speedily and successfully. In sport it means getting there just ahead of the ball or the player; in surgery it means knowing how to combine the automatic with the deliberate parts of an operation in just proportion. The talent of timing is commended to those surgeons who, on beginning an operation, seem to love it so longingly that they dislike to get through with it, but continue to pat and fondle the tissues assiduously and cease reluctantly after the period of limitation has expired, if not the patient.

Vision in surgery, therefore, is justified of its believers. Vision leads; performance follows; achievement abides. The greatest of these is vision. Its most natural and most important function would inspire a look into the future. Who knows what it holds? Certain it is that we are now in a changing age. Advancements in the science and art of surgery are the order of the day and new ideas are constantly in the making. Whether the trend will be in the direction of more operative surgery or less, no one may surely say; but there is such a thing as preventive surgery, done early or avoided entirely, and it may be that in the distant view our supreme aim will be to reduce the number of surgical operations and to raise the percentage of surgical meditations. As we go along, let us take with us surgical vision, permitting it to show the way, for

"To keep in sight Perfection and adore
The vision is the artist's best delight."

THE CONTROL OF PELLAGRA

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AND
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WASHINGTON, D. C.

The underlying factors concerned in the prevalence of pellagra fall into two classes, which from the standpoint of public health must be viewed from different angles.

There is a small, but not an inconsiderable, number of cases which arise from conditions peculiar to the individual. Among these are dietary eccentricities and idiosyncrasies, food fads, obsessions, alcoholism, gastrointestinal disease and other disturbances resulting in a disordered diet. These are isolated, or sporadic, cases and may occur anywhere, at any season and without reference to financial status or dietary surroundings. Conditions of this nature do not usually come within the scope of public health activities, and such cases may therefore be excluded from further consideration in this connection. Their prophylaxis and treatment are matters for the attention of the family physician.

On the other hand are the cases which arise from conditions more or less common to groups of individuals, such as households, certain institutions and sometimes the major element of the population of relatively large areas. Chief among such influences may be mentioned limitation of the kind and quantity of food crops produced, resulting in an undue restriction in variety, lack of availability of certain essential foods and foodstuffs during certain seasons, adverse economic conditions with reduced purchasing power and a general lack of thrift with its resultant impoverishment and malnutrition. These far-reaching and interlocking factors constitute the source of origin of endemic pellagra, which accounts for perhaps more than 98 per cent of all pellagra, and present a cross-section view of the conditions dominating the problem of its control.

The latest complete figures relating to the annual death toll from this disease in this country are those for 1930. During that year 7,146 deaths were recorded. The most reliable morbidity data available indicate that for each death there were not less than 35 cases and for every case a large number of patients who suffered from minor degrees of malnutrition and debility. There are few conditions more pathetic than a neglected case of pellagra, and perhaps no place in more urgent need of practicable corrective public health measures than a neglected pellagrous community. In no disease is the response to proper treatment or prophylaxis more gratifying. The lowered physical and mental standards and the reduced capacity for the enjoyment of life render its economic and social aspects of pressing importance in endemic centers. As a remediable cause of insanity it offers a most fertile field for constructive work in mental hygiene.

Of the 7,146 deaths reported, 7,000 (or 97.9 per cent) occurred in those states which lie wholly or partially within the cotton belt, and of these the vast majority occurred in that portion of the cotton belt actually engaged in the production of cotton. The next most prolific source is the smaller and more isolated rural industrial communities of the South. Pellagra never has been a problem in strictly urban centers regardless of their location or environment.

In clearing up its etiology, Goldberger and his associates, of the Public Health Service, have shown repeatedly:

1. Pellagra can be prevented at will by the simple addition of any one of several known articles of food to the dietary on which it developed.

2. It can be produced at will in persons never before involved by the removal of these items from the habitual diet, even though their chemical and energy values are fully compensated.

3. There is a specific water-soluble and heat-stable accessory food factor of the class known as vitamins concerned in its production, this factor being sufficiently abundant in those diets which prevent pellagra and low or lacking in those which fail to prevent it.

These are cold, hard facts based on a wide assortment of direct experimental evidence which may be regarded as a standard of quality in scientific medicine. The conclusion that the disease is due to a specific dietary fault is therefore not only unavoidable but inevitable, and any control measures which are not planted squarely on this conception of its origin can never hope to succeed.

Summarizing the foregoing, it is seen that pellagra is one of the leading causes of death and disability throughout much of the rural South, that it may be uniformly prevented by the use of any one of several supplemental foods and that the basic dietary conditions most favorable for its development are those which prevail in those sections in which cotton production is the principal agricultural pursuit.

Knowing the nature, source and means of prevention of this veritable public health scourge, the question of why more progress is not being made in its permanent control might fairly be asked. It is no difficult

Read before the Section on Preventive and Industrial Medicine and Public Health at the Eighty-Third Annual Session of the American Medical Association, New Orleans, May 13, 1932.

matter to map out a program designed to wipe out pellagra from any given section within a very short time, but devising a suitable program for its eradication and effectively carrying it out under the conditions prevailing are two entirely different propositions. No problem so intimately bound up with economic conditions, agricultural practices and dietary customs, which themselves are hard to alter, can by any means be classed as a simple and easy undertaking. It may sound simple enough, but it has obstacles which are not encountered in the usual preventable diseases. Not the least of these is that whatever permanent success is attained, the people involved must, themselves, ultimately play the essential rôle.

Under institutional conditions, where the diet is under centralized control, the problem of pellagra can be eliminated promptly. This was amply demonstrated by Goldberger and his co-workers in connection with the establishment of its etiology. Utilizing this knowledge, our insane asylums, homes for the indigent and orphanages, in which pellagra was formerly a most serious problem, have been able to control it in a satisfactory manner. By a few simple and comparatively inexpensive additions to the daily menu, one state institution for the insane, the largest in the South and the second largest in the country, has reduced the annual death rate from pellagra from 6.2 per cent of all inmates to as low as 0.1 per cent, this in spite of the fact that during the same time deaths from this cause for the state at large increased almost 100 per cent. Were it not for the irreducible minimum created by the constant admission of many almost hopeless cases of pellagrous insanity, there could now be little excuse for any considerable number of deaths from pellagra in this or any similar institution. Except under extremely reduced resources, its conspicuous presence in any community in which the diet is subject to regulation by central authority can no longer be justified.

There has been a rather sharp increase in the prevalence of pellagra during the past two years, but the increase in morbidity has been greater than that of mortality. A more general understanding of the proper treatment has made it possible to save an increasing number of patients who, under the old hit-or-miss methods, would have died. But this increased morbidity tells us in no uncertain terms that practical knowledge or means of its prevention have not been sufficiently diffused to enable the small cotton farmer or rural industrial worker to weather safely the dietary hazards occasioned by the recent shift in economic conditions.

Since it is people of restricted means who suffer most from pellagra—a situation which is aggravated by periods of economic depression—it has been said that to do away with this disease it will be necessary to reduce materially residual poverty and eliminate depressions. Both would, no doubt, be highly desirable, but fortunately neither is essential. There are numbers of nonpellagrous families in the pellagrous sections which, compared by the usual standards, are as poor as some of those who have pellagra or even poorer. Many of the inhabitants of the nearby southern Appalachian and Ozark sections, though in most respects notoriously poor, are seldom troubled with pellagra. It all depends on the source and nature of the food supplies and the ready availability of an adequate poverty-resistant and depression-proof diet.

The food situation in the rural sections of the cotton belt has become very sensitive to the price of cotton. The farms have gradually become less self-sustaining in the matter of both foodstuffs and forage as the production of cotton has become more intensified. The smaller, or tenant, cotton farmer has got into a rut from which he cannot easily extricate himself. Many have long since reached the point where they must depend wholly on outside assistance in making their crops, and the kind of crops produced is largely determined by those who extend the necessary aid. We must respect the right and propriety of the banker or merchant who furnishes the cash or supplies to designate, in the absence of other security, the kind of crops that shall be grown. A creditor cannot be expected to assume, to any considerable degree, the hazards incident to the production and marketing of major crops, other than cotton, under the conditions prevailing in this section. There are, however, in many localities public spirited bankers and country merchants who aid greatly in the various movements for better living by making the planting of a certain acreage in food and forage for home use a condition of every crop loan. Movements of this nature make most progress when the price of cotton is low.

However paradoxical it may seem, the slump in the price of cotton which operates to bring about an increase in the prevalence of pellagra will, if continued long enough, give rise to factors of a decidedly corrective nature. The more unprofitable cotton becomes and the longer it continues to be so, the greater will be the variety and abundance of food and forage crops grown in its stead, and the broader will be the basis for a more diversified diet. This very reaction was in evidence in many cotton-producing sections last year and has since become more pronounced and more general. This means a reduction of pellagra incidence in these areas, regardless of the severity and duration of the present depression. A similar favorable influence on the incidence of pellagra has long since been observed in those sections in which the devastating effects of the boll weevil have been such as to render the production of cotton uncertain and unprofitable.

It is not meant to imply that to control pellagra we must stop growing cotton. Cotton is the logical main crop in those portions of the South suited to its culture, and in all probability it will continue to be the backbone of Southern agriculture. But until the cotton grower has a wider and more dependable source of sustenance for himself and family than the few simple, nonperishable staples secured through the country store or commissary, pellagra will continue to exact its annual toll.

This brings us to the question of what there is to be done about it, and how it may be accomplished. To be permanently effective, corrective measures must be such as will offset the subtle influences which have progressively undermined the dietary stability of this section for a half century or more. In other words, endemic pellagra is largely a by-product of the more modern one-crop system of agriculture as practiced in the South. Its elimination will follow the adoption of a more diversified diet available at all seasons. This, in turn, must rest on either home production of a wider assortment of foods or a constant purchasing power covering a wider range. Nothing short of this can bring about a satisfactory solution of the problem.

Diversification of crops to a degree that will insure a more constant and adequate variety of home grown foodstuffs and sufficient forage and feed crops to maintain livestock and poultry for food purposes would seem

to be the logical solution. From the point of view of both economics and health this has everything in its favor; yet the prospects of bringing about permanent diversification to this degree are anything but encouraging. Such a policy has long had the untiring support of the United States Department of Agriculture and the state agricultural colleges with their various extension services, and the loyal backing of the agricultural and lay press. Still, but little permanent headway appears to have been made. The going is comparatively easy so long as cotton is unprofitable, but the gains usually melt away as the price again advances.

It is the sudden and unanticipated shift from the higher to the lower economic level that pinches the diet most, and this period of readjustment to the more meager returns is almost invariably accompanied by a fresh supply of pellagra. If the price of medium staple cotton should become stabilized either at below 5 cents or above 15 cents per pound, the pellagra situation would largely take care of itself. At the lower level, the cotton farmer would soon be growing sufficient food for his requirements, while the higher price would enable him to procure a larger assortment of foods from outside sources.

Such broad movements as general diversification or price stabilization, or both, may eventually relieve the situation, but the possibility seems so remote that substitute or supplemental measures are urgently indicated. Specific and practicable knowledge aimed at the very root of this problem must be brought into play if a satisfactory measure of success is to be attained.

Pellagra is the first, and so far as we know the only, deficiency disease of urgent public health magnitude with which we have to contend in this country. It is brought about in an extraordinary manner in that it is produced by the *absence* of something. Measures somewhat foreign to the usual functions of a public health organization will therefore have to be employed in its control. We public health men have become an aggregation of seasoned germ fighters organized to function against positive disease-producing factors, and our machinery has not been fully geared to meet this new public health demand. Our ideas of preventive medicine have long been the destruction or elimination of vectors of disease, or the heading off of their effects by the employment of serums or vaccines. In dealing with a dietary deficiency disease, a program somewhat reversed and having as its object the restoration of a missing essential must become a more conspicuous feature of our armamentarium.

The extent and importance of this problem are clear. The factors concerned in its production are well known. The avenue of approach is wide open. We need not await the solution of the chemical problem as to the exact nature of the mechanism by which the absence of this specific food factor produces pellagra or its presence prevents it. In all probability, we shall eventually know more about the ultimate action of all the vitamins, but the chances are that this additional knowledge will add little to the means and methods for its prevention now at our disposal.

In approaching the problem of pellagra control, we will do well to bear in mind certain outstanding epidemiologic observations: Approximately 90 per cent of all cases of endemic pellagra have their onset during the period from April to July. Human experiments, as well as numerous observations in the field, have shown that it usually takes from three to five months for pellagra to develop after the diet has become sufficiently restricted. This means that it is during the late winter and early spring months that the foundation for the season's crop of pellagra is laid, and that it is toward the correction of this seasonal fault that the first remedial measures should be directed.

The most promising procedure would be the endeavor to bridge this gap by direct aid in coordinating and furthering the activities of existing agencies such as the agricultural, nutrition and home economics extension services and the various live-at-home and other movements having as their object the improvement of economic and dietetic conditions in the rural sections of the cotton belt. The aim should always be to assist these people to solve this problem by their own industry and resources. Progress will be slow, but whatever is accomplished will be permanent. Subsidies in food production and distribution will produce results, but this can be neither accomplished nor perpetuated without outside financial assistance.

The Public Health Service has for some time been engaged in the study of the relative pellagra-preventive value of the more common staple foods and foodstuffs. Early in this study, fresh lean meats and milk were found to be dependable pellagra preventives, but they are not within reach of the average pellagrous household. Here and there a family may be induced to establish a dependable source of one or both of these, but on the whole little progress may be expected if sole dependence is placed on their introduction in adequate amounts. With this limitation in mind, attention has more recently been centered on those foods or foodstuffs which may be most easily and cheaply produced at home or otherwise made available at the season when pellagra-preventive foods are normally scarcest. Other things being equal, those which require the least effort to produce or prepare for the table and will best fit into the established system of agriculture and the domestic habits and customs of these people will prove most practicable.

So far, thirty-five foodstuffs have been tested. Of these milk (including buttermilk and canned evaporated and dried milk), fresh beef, canned corned beef, liver, canned salmon, canned haddock, tomatoes, turnip greens and canned English peas have each been found to prevent pellagra when added in sufficient quantity to an otherwise pellagra-producing diet. Dried beans and peas, eggs, canned spinach, green cabbage and canned string beans, though less effective, are valuable contributory sources of the pellagra-preventive factor. Cornmeal, wheat flour, rye flour, oatmeal, molasses, cane syrup, sweet potatoes, mature onions, carrots, rutabagas, salt pork, lard, cottonseed oil, butter and gelatin have little or no pellagra-preventive value, regardless of the quantity used. Dried yeast and commercial wheat germ, although not commonly looked on as human foods, are good sources of the pellagra-preventive vitamin and are valuable supplements, especially as temporary expedients under emergency conditions. A study of collard, kale and mustard greens is now in progress, with indications that the collard greens, at least, will prove to be of value.

One does not have to look far to see that during the early portion of each year the diet of many people of the pellagrous sections is limited almost exclusively to the class of foods which have been found to be non-preventive. Although poor protection against pellagra, foods of this nature are nevertheless essential. They

serve as the basis for sound nutrition and, when properly supplemented, constitute a satisfactory ration. Their use should not be discouraged. The goal to be sought is amply exemplified in every pellagrous community. In looking for cases of pellagra, the home surrounded by evidence of a good garden, or a cow or two, a few pigs and some poultry may as well be passed up, for the chances are less than one in a thousand that pellagra will be found. On the other hand, the home surrounded only by last year's cotton patch will always bear watching.

MUCIN THERAPY FOR PEPTIC ULCER

PRELIMINARY REPORT OF OBJECTIVE RESULTS ON PATIENTS WITH INTRACTABLE ULCER

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Fogelson [1] reported successful results in the treatment of peptic ulcer with gastric mucin. Kim and Ivy,[2] and Fauley [3] performed experiments on animals and reported that mucin prevented ulcer formation in dogs with biliary fistulas. Alkalis were found by Kim and Ivy [4] to prevent ulcer formation, but the animals did not do well in general.

The results of these workers seemed to justify an independent clinical study. Atkinson [5] reported that mucin therapy was successful in ulcer-bearing individuals.

In the past it has been impracticable to estimate the value of ulcer management because of the difficulty of proper control and the use of subjective evidence.

Cases of peptic ulcer present such diverse clinical courses that most of them cannot be used for the purpose of passing judgment in regard to the value of a certain management. Previous experience at St. Luke's Hospital clinic showed that many ulcer patients recovered without any form of management, while others improved with a favorable change in environment, a few dietary suggestions, powders, belladonna, bromides or phenobarbital. A small percentage persisted in having difficulty on strict managements.

METHOD OF EXPERIMENT

As a control procedure, patients were chosen for mucin therapy who had experienced many recurrences and who had failed to improve on hourly feedings and hourly powders. An additional control series of "difficult" patients was continued on feedings and powders.

Subjective evidence has been overemphasized in estimating the healing of peptic ulcer. Frequently we have seen ulcer defects grow deeper or additional ones appear on various managements considered adequate, when the patient was subjectively improving and even entirely free of distress. Conversely, in other patients, the defects in topography diminished or disappeared and the subjective symptoms became more severe. The degree of distress, its location and behavior varies greatly in different patients, even in the same patient at different times if he is observed critically. Some of our most difficult ulcer patients had a minimum of distress, especially those prone to ooze a good deal of blood into the stomach. Subjectively these were easily palliated. Some of the patients objectively controlled with little difficulty had the most persistent subjective complaints. We believe, however, that we have not included the psychalgias in the present series because of the strict diagnostic requirements. Further knowledge of the rôle of the vegetative nervous system may explain these observations and perhaps at some future time an investigator or clinician may be able to rely on subjective evidence in peptic ulcer. For these reasons, objective data were obtained in the patients studied. The objective criteria to which we refer are the presence of blood in the stomach and stools, hyperacidity, and definite roentgenographic observations.

A definite diagnosis was thought essential in this study although, in general, relatively few ulcer patients can qualify in all respects. The following conditions were required for every patient: an unimpeachable ulcer history; occult or gross blood in the stomach and stools; hyperacidity; relief of distress with mucin, powders, neutralizing food or aspiration, and definite roentgenographic evidence.

One hundred and sixteen ulcer patients have been treated with gastric mucin; the present report includes thirty-seven cases. The smaller number was chosen because they had been intractable over a long period on strict management. The remainder either had not been observed for a sufficient length of time or failed to report regularly for their weekly tests.

Twenty-one patients were studied in the hospital. Many of these patients had been under our care on various ulcer managements for years. The average time spent by each patient was 35 days; a total of 735 hospital days. The hospital period was made as long as was financially possible to obtain objective evidence and exercise clinical control. Before entrance, roentgen studies, gastric analyses and stool examinations were made and the patient placed on hourly "neutralizing" feedings for an average of ten days. Motor meals were given when indicated. No mucin was administered until sufficient control determinations had been made and clinical behavior noted. Each patient, except those having gross hemorrhages or showing signs of perforation, underwent the following routine: a weekly forty-five minute Ewald test meal; a weekly two hour fractional meal, followed by from two to six hour periods of from fifteen to thirty minute aspirations to study secretagogue characteristics of various mucins and alkalis. Aspirations were done twice weekly before breakfast and twice weekly at 11 p. m. Weekly blood counts were taken. All stools were analyzed. The patients were studied with roentgen rays at periods of from two to four weeks. When showing occult blood in the stomach contents or stools the patients were kept in bed, but they were allowed to be up and about after none was found. On dismissal from the hospital they followed the outpatient routine.

Read before the Chicago Medical Society, March 16, 1932.
From the Department of Medicine, Northwestern University Medical School and St. Luke's Hospital.

1. Fogelson, S. J.: Treatment of Peptic Ulcer with Gastric Mucin, J. A. M. A. **96**: 673 (Feb. 28) 1931.
2. Kim, M. S., and Ivy, A. C.: The Prevention of Experimental Duodenal Ulcer by Feeding Neutral Gastric Mucin, J. A. M. A. **97**: 1511-1513 (Nov. 21) 1931.
3. Ivy, A. C., and Fauley, G. B.: Factors Concerned in Determining the Chronicity of Ulcers in the Stomach and Upper Intestine, Tr. Am. Gastro-Enterol. A. **33**: 81-93, 1930.
4. Kim, M. S., and Ivy, A. C.: Comparative Value of "Gastric Mucin" and "Alkalis" in Prevention of "Peptic" Ulcer in Biliary Fistula Dogs, Proc. Soc. Exper. Biol. & Med. **29**: 686 (March) 1932.
5. Atkinson, A. J.: Gastric Mucin in the Treatment of Peptic Ulcer, J. A. M. A. **98**: 1153-1156 (April 2) 1932.

Sixteen of the thirty-seven patients were diagnosed, observed and treated exclusively as outpatients. The patient was questioned and examined every week. All, including the twenty-one former hospital patients, had Ewald test meals and stool examinations at each visit. Blood counts, fractional test meals, motor meals and roentgen examinations were continued in the combined group when indicated.

The average observation period in this group thus far has been slightly less than one year.

The average duration of ulcer symptoms for the group of thirty-seven was seven years and nine months per patient. There was an average of sixteen recurrences per person. Previous hospitalization totaled 2,171 days, giving an average of 58 days per patient.

When mucin was begun, strict ulcer management had been given to each patient for an average time of three years and six months.

The age average of the group was 31 years and 6 months.

Thirty-one were men, six were women. Thirty-three had duodenal ulcers, two jejunal ulcers, one a gastric ulcer, and one had both duodenal and gastric ulcers. Of these ulcers, fourteen were of the penetrating type. Three patients had massive hemorrhages when they came under our care, and eight had histories of repeated hemorrhages. Five had histories of perforation.

The majority of the patients used manifested no other disease conditions which in any way related to the ulcer. The Wassermann test was taken on each person in this series.

RESULTS

The positive benzidine reactions in the stomach contents disappeared on an average in nine days, the longest time being twenty-six days. In the control series on hourly feedings and alkalis, the benzidine reaction became negative on an average in twenty-four days. Several in the control series were not included in this average, because they never became negative on the usual management prior to the administration of mucin.

The positive benzidine tests in the stools became negative on an average of 11.5 days after starting mucin. The control series became occult blood free in 27.2 days.

The average gain of weight of the mucin treated patients was 13½ pounds (6 Kg.); the average for the control series was 9 pounds (4 Kg.).

As the mucin treatment progressed, a study of gastric acidity showed that in a majority of patients the readings in the free hydrochloric acid decreased as judged by the weekly Ewald test meals. Some remained stationary, and a few went up during the first twelve weeks of the treatment. In the latter group, double doses of mucin were used for intervals of from three to five weeks. This lowered the free acidity determinations on an average of from 15 to 20 units, but when the ordinary doses were resumed the acidities again increased to the progressively diminishing original levels. The control series on powders and feedings also maintained a high acidity; a few diminished slightly, but the majority remained at the original level or went higher as the treatment progressed.

No management thus far used in our clinic has succeeded in transforming hyperacidity to a so-called normal acidity without the "healing" of the ulcer or the relief of the retention. As the ulcer "heals," the hyperacidity usually decreases unless alkalis are used. In a minority of ulcer patients, managed with alkalis, the free acidity diminished; but in the majority, the acidity increases during the ulcer healing process. Whether or not the ulcer heals, the chronic ulcer patient tends to maintain a hyperacidity. Mucin therapy has lowered the acid levels of healing ulcers in intractable patients more effectively than any method we have previously employed. It is to be kept in mind that these statements are based on data obtained by morning test meal aspirations rather than 11 p. m. aspirations.

The hypersecretion accompanying peptic ulcer was moderated more with mucin therapy than with the same management with alkalis. Alkalis seemed to diminish a hyperacidity and hypersecretion for several weeks and apparently overcame this troublesome complication entirely in easily controlled ulcer patients. In the intractable patients, the hypersecretion increased after several weeks for some unknown reason. This was more marked with alkalis than with mucin.

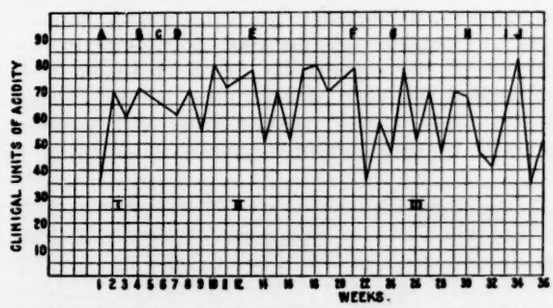

Chart 1.—Gastric free acidity levels; results of weekly Ewald test meals. The behavior of the gastric free acidity is shown in a typical intractable "peptic ulcer." The patient was a Negro porter, aged 44, who had had a recurring duodenal ulcer for eleven years. The previous hospitalization for ulcer management was 112 days. Since the ulcer was first diagnosed, he had received frequent feedings and alkaline powders. He began treatment in our clinic in 1928. At this time, roentgen studies showed a definitely deformed duodenal bulb with a residue at the end of five hours. Hourly feedings and powders were used until 1931. The distress, in spite of the strict management, had become progressively more severe and attacks more frequent. He had had night distress for five years. Vomiting had been his only means of complete relief. There was a total disability for eight months before mucin was begun. He became free from distress on the first week of mucin therapy. The stomach contents and stools, which had remained strongly benzidine positive with the alkaline management, became negative after one week of mucin and have remained so. He returned to work two months after starting mucin. There has been no recurrence since the mucin treatment was started.

A, hourly feedings and hourly powders were started as the patient entered the hospital. *B*, the patient had very little relief from distress but was released from the hospital. *C*, the patient stated that he was so weak and distressed that he was unable to come to the clinic for three weeks. During this time he took hourly feedings but no powders. *D*, hourly feedings and powders were resumed with unsatisfactory subjective relief. *E*, alkaline powders were stopped. A tablespoonful of mucin was given every two hours; the hourly feedings continued. *F*, the dosage of mucin was doubled to see whether hyperacidity would diminish. *G*, the ordinary dose of mucin was resumed. *H*, mucin again was doubled. *I*, the patient ate sardines and had nausea, vomiting, diarrhea, and generalized abdominal distress. He did not come to the clinic and went without mucin for one week. *J*, a double dose of mucin was resumed. The roman numerals refer to the roentgen observations made by E. L. Jenkinson. I, duodenal bulb deformed on both curvatures; one fifth of the barium remained at the end of five hours. II, duodenal bulb was deformed and fixed, having a clover leaf deformity; there was still a small residue at the end of five hours. III, duodenal bulb showed definite improvement since the former examination, as there was less deformity. There was still a residue at the end of five hours.

Hourly feedings, without the hourly alkaline powders, when used on easily controlled ulcers, had approximately the same effect as mucin therapy in diminishing a hypersecretion or hyperacidity.

When an ordinary dose of mucin, which is a rounded tablespoonful (15 Gm.), was placed in the stomach at the end of a two hour fractional test meal there was usually a slight increase in free acidity. This was sometimes just under or just over the maximum reached at the peak of the test meal and usually diminished after from thirty to sixty minutes and was followed by a gradual fall, which was maintained until the end

of the test, from four to seven hours later. The secretion rate, with and without mucin, was checked in fifteen all-day experiments of this type. The average did not exceed that obtained on a similar series of ulcer patients aspirated at from fifteen to thirty minute intervals, who had received either no mucin or some combination of alkali. Therefore, no marked secretogogue effect was obtained from the mucin preparation we used. However, Rivers,[6] has obtained from some mucin a decided secretogogue action, which we are informed is now being controlled by both chemical and biologic assay.

Roentgenograms were made and fluoroscopy was performed on all patients at intervals of from two to four weeks. A progressive improvement resulted in a majority of the patients. The hourly feeding series and the hourly feeding and hourly alkaline powder series also showed improvement. In the thirty-seven intractable ulcer patients, in whom further improvement on strict ulcer management was not noticeable, it was possible to influence the roentgen manifestations in a majority of instances in a favorable manner by the use of mucin. A decrease was evident in the deformity of the topography of the bulb or stomach when studied at a time of maximum activity and maximum filling. Several patients improved roentgenographically up to a certain point but failed to improve

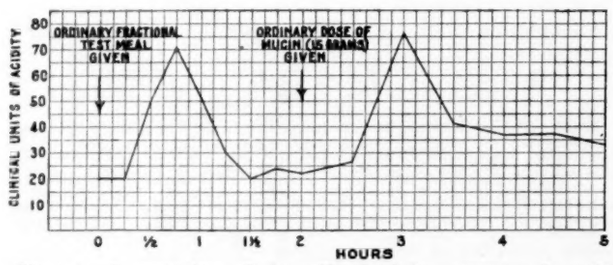

Chart 2.—A comparison of the acid stimulating property of mucin with that of a bland gruel. This patient is being treated for a duodenal ulcer of penetrating type.

further, owing perhaps to the existence of scar tissue. Most of the patients with a penetrating type of peptic ulcer showed a progressively diminishing defect which accompanied the disappearance of blood from the stomach and stools, and the decrease of acidity and subjective relief. This leads us to believe that these ulcer craters "healed" with mucin therapy when they had failed to heal with similar diet and alkalis.

In the thirty-six out of thirty-seven intractable ulcer patients, mucin gave subjective relief of distress in an average of eight days per patient.

There was one failure in the series. The diagnosis was a penetrating type of duodenal ulcer and multiple diverticulitis. The patient was not benefited by hourly feedings and alkalis and received no relief or objective improvement from mucin. Each was tried for four weeks. Morphine in large doses was palliative only. It was felt that surgical aid was indicated. When the abdomen was opened, a large red granulomatous mass, in the region of the first part of the duodenum, was found. This apparently surrounded a penetrating ulcer. The patient obtained partial relief from a posterior gastro-enterostomy, followed by milk and cream and alkalis. Six weeks later mucin was started again, with complete relief on the first day. Normal acidity and benzidine negative stools soon followed. We assume that perhaps it took that long for the granuloma to subside and the enterostomy to function smoothly.

6. Rivers, A. B.; Vanzant, F. R., and Essex, H. E.: The Dangers of Using Impure Mucin in the Treatment of Peptic Ulcer, J. A. M. A. 98:1156 (April 2) 1932.

SUMMARY AND CONCLUSIONS

1. Thirty-six out of thirty-seven patients who had partial to complete disability on previous strict ulcer management have been relieved objectively and subjectively by mucin.

2. Roentgen deformities in topography were influenced more by administration of mucin than by former management.

3. Emptying time or retention was diminished on mucin treatment. We do not consider that we have sufficient evidence to make a comparative statement at this time.

4. Disappearance of gross and occult blood in stomach and stools was more rapid with mucin treatment than with conventional management.

5. Mucin treatment was effective in controlling several massive hemorrhages from the stomach. Other methods were also effective.

6. There have been no recurrences in thirty-six patients who had frequent previous recurrences.

7. Hyperacidity, as measured by weekly Ewald test meals, was not lowered on the treatment of hourly feedings and powders and was only somewhat lowered by mucin treatment. All the patients were taken off powders or mucin and food twelve hours previous to the test meal.

8. Mucin in ordinary doses did not lower gastric acidity appreciably when placed in the stomach after a two hour fractional meal followed by aspirations at frequent intervals for from four to seven hours. In the mucin we used we did not observe any secretogogue action which interfered with the beneficial effect. From our objective observations, the therapeutic effect is due to some factor other than neutralization of acid. The quality of commercial mucin has been improving, as the result of the cooperation of the makers with Drs. Ivy and Fogelson. A histamine-like substance is no doubt present in varying quantities, as it is present in other tissue extracts, such as liver extract. This is now controlled by chemical and biologic assay. We have seen no toxemias. There has been a notable increase in the feeling of well being and an improvement in the appearance and behavior of the mucin-treated patients.

9. Mucin has a beneficial effect on the bowel.

10. There was one failure; at operation a red granulomatous tumor mass was found having formed about an ulcer of penetrating type. Gastro-enterostomy was done. Distress persisted with alkalis for six weeks and then subsided with mucin; this may have been due, of course, to functional improvement of enterostomy at this time.

11. We have found in the past that a majority of peptic ulcers heal with no treatment or any treatment. The minority are sometimes very resistant to the best forms of management. Mucin has helped these intractable cases. We realize that any local palliative treatment does not in itself change the constitution or the vegetative nervous system of the patient who is an ulcer-bearing individual. We shall persist in this comparative investigation of methods in the hope that further physiologic studies will disclose more clearly the etiology and treatment of ulcer.

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INEXPERT REFRACTION

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The eye is defined very simply as "the organ of vision" (Century Dictionary, p. 2103). A number of secondary definitions are given, merely amplifying or extending the first.

Is it presumptuous to begin a paper to be presented before the most representative group of American ophthalmologists with a statement so axiomatic? If so, we crave forgiveness. Recalling our undergraduate years and those immediately following, when we were first putting to practical use the concepts of medicine and surgery acquired in the laboratories and clinics, that which preeminently claimed our interest and attention was the means of restoring the sick patient to health. We were aware that a malady might, through the creation of toxic products, seriously interfere with the normal activities of certain organs, e. g., the impaired function of the kidney in scarlet fever or the development of myocardial changes in the course of diphtheria. Therapeutic indications were clear; to rid the body of toxins as speedily as possible and to lighten the load on impaired organs. The restoration of function was incidental to the procedures employed to restore the patient to health. Sometimes the cure demanded the destruction or removal of organs, e. g., the abscessed tooth, the tuberculous kidney, the hypertrophied prostate, etc.

Impairment of the function of a bodily organ is due to (*a*) toxins incident to some general malady, (*b*) toxins generated by infection in some distant organ or (*c*) disease or growths originating in the organ itself.

Impairment of the function of the organs of special sense may be wholly independent of local or general disease. The senses of smell and taste are subject to fairly wide variations, and may be made more acute by training, as in the case of wine and tea tasters. Hearing may be impaired by occlusion of the external auditory canal with wax. The sense of touch may be diminished by cold or conversely increased by moderate heat. The delicate and accurate tactile sense of the blind has been developed by constant manipulation of objects to determine their nature in the absence of visual perception, and the necessity of learning to read the raised types.

Above all, the sense of sight is capable of improvement by the simple expedient of placing a lens before the eye. It is not at all necessary that both the elements, axial ametropia and astigmatism, which are inherent in most eyes, be considered in the composition of a lens that is intended merely to improve vision; for this purpose usually a simple plus or minus sphere will suffice. Some are content with this improvement, and not requiring high visual acuity, having no symptoms of eyestrain and not possessing delicately poised nervous systems, do not suffer the miseries of asthenopia. For others—and their name is legion—the most exactly estimated compound lens, with both spherical and cylindric elements determined to the eighth of a diopter and the axis of the cylinder exactly placed, is a necessity if the eye is to see most acutely and function most comfortably.

Read before the Section on Ophthalmology at the Eighty-Third Annual Session of the American Medical Association, New Orleans, May 13, 1932.

The young student of ophthalmology will make an auspicious beginning if, either through correct teaching or the exercise of his native intelligence, he has indelibly impressed on his mind the fact that the eye is "the organ of vision," and that the work to which he is about to dedicate his life has three simple (but tremendously important) objects, namely, the preservation and increase of vision, the comfortable functioning of the eyes and the prevention of blindness.

The majority of all patients who consult the ophthalmologist have, primarily at least, errors in refraction. Certain external disorders, e. g., blepharitis, conjunctival hyperemia and hordeolum are frequently dependent on uncorrected ametropia. Congestion of the choroid (the "fluffy choroid" of Risley) and the veiling of the papillary margins in hyperopia or hyperopic astigmatism are not, in our opinion, imaginary concepts. Who has not seen the disappearance of such signs after the wearing of an exact correction? If further proof were needed of improvement in the intraocular circulation, hence of the nutrition of the retina, one has only to recall the often striking increase in visual acuity following the constant wearing of appropriate spectacles.

One should not fall into the error of regretting the appearance in one's office of "just another refraction case." It is our conviction that such an attitude of reluctant tolerance is at the bottom of much of the mediocre work that is, even today, being done in this all important branch. Rightly viewed, the patient with ametropia and all the symptoms incident thereto presents to the ophthalmologist a challenge which is to be met enthusiastically with all the care, time and painstaking effort that would, without second thought, be bestowed on the patient who is a candidate for an operation for cataract.

It has been our practice for many years to secure from the patient a complete history of his previous contacts with opticians, optometrists and ophthalmologists, and we take pains to dispel the confusion that usually exists as to which type of examiner he has consulted. Careful inquiry is made as to the use of "drops"; the duration of the symptoms of cycloplegia giving a hint as to whether homatropine, scopolamine or atropine has been used; the time that has elapsed between the cycloplegic and postcycloplegic tests; the number of postcycloplegic tests (if more than one); the method of securing glasses; whether or not an examination has been made of the finished product; whether there has been insistence on a spectacle mounting, rather than an eyeglass; whether specific instructions have been given as to the period of wearing the glasses—constant, inconstant or for near vision only, or whether a return visit at the end of a fixed period was suggested.

We endeavor, also, to secure some notion as to whether any tests of the ocular muscles have been made, but we must confess that, in most cases, the patient's recollection of the details of such tests (even when the subject is introduced by leading questions) is too hazy to serve as reliable evidence.

We have discussed with many colleagues their attitude toward eye testing. Is the task enjoyable or irksome? We have observed, so far as possible, the methods employed by other men; we have tried to determine whether the older men have modified their methods of objective and subjective examination in the light of recent advances in technic; we have scrutinized our own methods and from time to time have made

modifications, some of which have served as checks on prior methods and have been retained.

As a result of these inquiries and observations, we have reached certain conclusions which seem to offer an explanation for some of the inexpert refraction that, from time to time, comes to the attention of every ophthalmologist.

REASONS FOR INEXPERT REFRACTION

1. There is the ophthalmologist who is "not interested in refraction." Is not this almost tantamount to a declaration that he is "not interested in ophthalmology"? If ophthalmology has any attraction for him, it lies in diagnosis, therapeutics and operations. Closer inquiry will usually reveal the fact that he has received just enough insight into ophthalmology to realize that refraction tests require precious time that might be more lucratively employed. It is our positive conviction that this type of practitioner is far less frequent now than he was twenty years ago, and it is to be hoped that he will eventually become as extinct as the "dodo."

2. Some ophthalmologists have so many "irons in the fire" that they have "no time for refraction." The demands of teaching, the pursuit of original research, the writing of papers, the attendance at engagements outside of professional life and the exigencies of private and consultative practice (which may include otorhinolaryngology) render it physically impossible to "do refraction" (there simply are not enough hours in the day). Therefore this part of the practice is delegated to a medical assistant. This may be unfortunate for the latter, who is notoriously apt to fall into the ways and adopt the ophthalmologic habits and concepts of his chief. In such circumstances it is not surprising that the young man soon comes to regard his job as irksome and hopes for an early release from its drudgery. We wish, however, to state that we know of many offices in which this arrangement works well, but only because the chief is interested and is an expert in refraction and insists, at least in the beginning, in supervising the work of the assistant, and later when the latter becomes more expert is ever willing to offer counsel and advice.

In lieu of a medical assistant, an ophthalmic technician—usually a recent graduate from a woman's college—can be trained to serve a very useful purpose in the preliminary tests; but there should, invariably, be a check-up and revision by the ophthalmologist, as the patient should have the benefit of his mature judgment in writing the prescription, and his opinion is necessary to determine the presence or absence of extra-ocular or intra-ocular disease.

3. The attitude that "the game is not worth the candle" is held by some ophthalmologists. We are quite sure that there are some colleagues who view with a smile of amused tolerance what they regard as excessive concern for the refinements and niceties of eye testing. They point out that the enthusiast's most meticulous efforts may be quickly nullified by the bent frame, or the round lenses turned to an axis not intended. They recite with glee the easy tolerance of some eyes "fitted?" with lenses unsuited either in spherical or cylindric component. But they seem to forget that for one pair of eyes so tolerant there are dozens that would be tortured by such maladjustment. Much depends on who is the owner of the astigmatic off-axis eyes.

4. Some men practicing in smaller communities have stated to us that they feel themselves in direct competition with optometrists. To maintain their standing with patients they think they are compelled to "speed up" the work of refraction, to adopt short cuts, to get the patient through in a day, etc., in a word, to lower the quality of the work to optometric levels. Such a practice seems to us sheer folly, and its continuance constitutes a betrayal of professional integrity. By method and practice the ophthalmologist should secure the most accurate measurement, and it is a matter of no moment whether his result is attained in one day or ten. If the ophthalmologist is going to fall to optometric levels, he is doing far more than optometric propaganda could ever do to perpetuate in the public mind the utter confusion that now prevails.

5. Much inexact refraction emanates from eye clinics. Many of the clinics are undermanned, and the number of patients demanding refraction exceeds the number that can be tested accurately, so the policy of "roughing it out and letting it go at that" prevails. Happily, this criticism does not hold for some clinics in which the technical equipment is of the best and one or more men, skilled in refraction, are paid for doing expert work.

The beginner in ophthalmology should adhere strictly to the teachings and practices of the art and science of refraction laid down by our ophthalmologic masters. Such a course may not in the beginning bring to him a large clientele, but in the long run he will secure the confidence of the public, or at least, that part of the public that is sufficiently discriminating. In the meantime, he will have the consciousness of having done his work with precision and thus upheld the highest ideals of professional practice.

VARIATIONS IN REFRACTION

It is well always to be on guard against misjudging the work of a colleague who may have preceded one by several years in testing the eyes of the new patient. His correction, as determined by neutralization or by one of the lens-measuring devices, may seem surprisingly at variance with the determination of the present refraction, and one may be tempted to disparage his skill. An ophthalmologist who has been long in practice will have had many experiences of the changes in the refraction of the human eye retested several times over a period of years; at times the change may be so striking that he may have misgivings as to the accuracy of his own prior tests. Experiences of this sort breed humility and suggest extreme caution in condemning the correction of a predecessor known to be a careful and painstaking examiner. We know that some of our patients, for whom we have spared neither time nor pains in deciding on the most adequate correction, have deserted us for colleagues who, on subsequent retesting some years later, have been astonished at what appeared to be the inexactness of our estimation. An increase or decrease in hyperopia, an increase or slight decrease in myopia, a variation in the degree of astigmatism and a shifting of the axis are common changes which may and often do occur in the space of a few years. Such changes are well known to patients who come at stated intervals to be "checked up" even in the absence of symptoms. Others wait until symptoms obtrude unpleasantly to remind them that "it is time to have my glasses changed."

When all due allowance has been made for variations in refraction which normally occur with the lapse of years, there remains a large group in which by no stretch of the imagination can one bring oneself to

believe that the prior estimate was correct or even approximately so. We have seen—doubtless an experience shared with many members of this Section—persons with hyperopia supplied with minus spheres, those with hyperopic astigmatism given minus cylinders, those with mixed astigmatism treated as if they had the myopic variety. A common error is the prescribing of spheres for patients with compound hyperopic astigmatism.

In the management of presbyopia there is much unwisdom manifest. Failure to take into consideration the reading habits of the patient, the distance at which he prefers to hold his book, accounts for improper presbyopic additions. Occupation must be considered; great care should be taken to adapt the near vision lens to the distance habitually required in the occupation. The piano and bridge player need special consideration; the double bass player in the orchestra must, perforce, view his music at double or more than the usual reading range. The amount of accommodation remaining in presbyopic eyes is not always equal; if found unequal, tests should be made to determine whether dissimilar reading additions will not prove more comfortable.

Far too little attention is paid to the estimation of the precise refraction in eyes with corneal deformities and opacities, in eyes with chronic glaucoma and in eyes with early cataract. Painstaking, prolonged and repeated tests will often yield results surprising to the examiner, and immensely gratifying to the patient—results not predictable on the basis of the known pathologic process in the eye. There is no more fascinating game (to the enthusiast in refraction more stimulating than bridge or cross-word puzzles) than the contest with the patient to provide him with the ultimate in vision-improving glasses. We have used the term "contest" advisedly. Given an unintelligent, unresponsive patient, one who has never been trained to make accurate observations, who tires easily or who is openly antagonistic, and it is a game that should arouse in the examiner the well known American competitive spirit. As in other games, the examiner may find himself defeated, but if he has made a valiant effort to do his best he will go down with colors flying, and undiscouraged, will be ready and eager to repeat his efforts on the next patient.

With the advance of cataract, the hyperopic eye loses its hyperopia or becomes myopic in varying degrees. It has been our experience that many examiners—and this statement applies to ophthalmologists as well as optometrists—are content to sharpen distance vision by prescribing minus spheres and wholly disregard the associated astigmatism. This practice often leads to overcorrection of the myopia, the examiner piling on all the minus spheres possible in an effort to secure better acuity; usually a spherocylindric combination, which measures the true refractive state, implies a weaker sphere. It has been our experience that as a rule, a lens representing the true refraction of such eyes is gratefully accepted. With advancing cataract, the astigmatism may change rapidly in amount and axis; such eyes, therefore, require frequent retests. On the other hand, some of our patients with early cataract rebel against the spherocylindric combination which yields the highest acuity and insist that a plain sphere is more comfortable.

The patient with beginning cataract is even more interested in securing a reading lens that will promote him from being a reader of "headlines only" to ability to read ordinary newspaper or magazine print. To attain this end the greatest care must be taken to determine the exact cylinder (and precise axis), and sometimes it will be found that the best axis of the cylinder for reading purposes does not coincide with that which has been determined at 6 meters. Even if the cataract is so far advanced that an acuity better than 6/30 is not secured and it is found that plus additions do not enable the patient to read better than J. 5 or 6, the best combination can be incorporated in a Zeiss telescopic spectacle; thus reading vision may often be raised to J. 1.

We have no apologies to make for stressing the importance of securing the most accurate correction in eyes with early cataract or quiescent glaucoma. The best interest of a very old and decrepit person is not always served by performing a surgical operation of any sort, and there may be any number of cogent reasons for avoiding, or at least postponing, operation. In the meantime, it is our duty to afford as much comfort and solace as possible by giving all possible optical aid.

METHODS OF EYE TESTING

In recent years comparatively few papers have dealt with the consecutive steps in eye testing, leading to a determination of the lens to be prescribed. (A notable exception is the excellent paper by Bahn.[1]) The adoption of a definite routine, permitting of variations, to suit the exigencies of unusual conditions, seems to us a necessity. Not all examiners will be satisfied or successful with a set formula; it is far better that each should develop a method which, while conforming to the principles of physiologic optics, yields a large measure of satisfaction to himself and comfort to his patient.

Our own method is a composite of several well known procedures and was adopted with a view to providing all necessary checks. It is a great satisfaction to reach identical conclusions as to the strength and axis of the cylindric component using (*a*) the astigmatic dial and cross-lines and (*b*) the cross-cylinder.

First, a word as to equipment. It is vitally necessary that one's test lenses should measure, both singly and in combination, the refractive power of the finished lens as it comes from the optician. Various manufacturing opticians are now supplying Vertex refraction test lenses which conform to the requirements just stated. Jackson [2] and others have pointed out the advantages of planospheres and planocylinders.

The trial frame should be comfortable, capable of independent lateral movements of each cell, with protractor scale accurately etched on each rim. We consider it advisable that the milled head which rotates the revolving cell containing the cylinder should be large and accessible so that the patient himself may twirl the screw at certain stages of the test. The refraction corridor should be dark or at least in half light. An excellent arrangement is that described by Olsho.[3] The test letters are in a four-sided box, with central illumination evenly diffused by reflection from mirrors lining the four walls. In addition to the test card—we prefer the Thorington chart with letters subtending an angle of 4 minutes—we have astigmatic charts, both radiating lines and rotatable

1. Bahn, C. A.: Eliminative Subjective Testing for Glasses, South. M. J. **14**: 732 (Sept.) 1921.
2. Jackson, Edward: Advantages of Plano Trial Lenses, Am. J. Ophth. **10**: 266 (April) 1927.
3. Olsho, S. L.: Range for Refraction Embodying New Features, Am. J. Ophth. **8**: 57 (Jan.) 1925.

cross-lines, and the little Maltese crosses (in three sizes) which Beach [4] devised as an aid to the detection and measurement of astigmatism. Our astigmatic charts are based on Lancaster's [5] charts. We have had a draughtsman draw, in india ink, on the finest of white cardboard, radiating lines 3 mm. in width, at intervals of 10 degrees. To economize space, this chart is shaped like an old-fashioned fan, the lowest radii being extensions, respectively, of the 10 and the 170 degree line. The cross-lines 4 mm. in width are drawn on a circular disk which can be rotated around a pivot at the center. Occasionally we use Friedenwald's [6] charts—black lines bordered by white on a gray background—and find them useful with some patients. Our ranges are 6 meters = 20 feet.

The preliminary examination is made with the greatest care. We believe that none of the tests should be performed perfunctorily. After noting the visual acuity without glass, the patient is greatly overfogged—to a point where vision is not more than 6/80. The lights illuminating the test letters are turned off. The patient is requested to look vaguely in the direction of the test cabinet, now in semidarkness. He is instructed to make no effort to see clearly. After waiting several minutes, the examiner begins to "lift the fog" by turning on the lights illuminating the test charts. The patient is urged to read all he possibly can and is given time to decipher some of the letters on the line below the one he states he can clearly see. A certain amount of levity is permissible in the effort of the examiner "to sell" the fogged line of letters to the patient. We have found it useful to offer a fictitious prize, the more incongruous the better, e. g., "a big cigar" to the women, or "a powder puff" to the men, in an effort to amuse and awaken interest in the test. For other patients a serious explanation, with an appeal for all possible concentration on the matter in hand, serves the purpose better. In testing children it is necessary to proceed slowly, to gain their confidence, to discuss their dolls or their pets, to enlist the active help of the mother in pointing out the letters or symbols, and in every way trying to metamorphose your activities and the child's into a game. Therein lies the value of interesting pictures—we use Ewing's pictographs (cross, pitcher, ring, square, chair, star, etc.)—which we find originally more interesting to children than the "E" card, and are eagerly asked for at the reappearance of the child for the cycloplegic test. The acuity of the very youngest children is better secured, perhaps, by the use of the "E" card because it is not necessary for the child to name the symbol, but merely to designate its position by positions of the hands. For such children the refinements of subjective testing are out of the question; it is best to rely on a correction based on careful and repeated skiascopy. But for the child of 5 to 8, our skiascopic findings are always supplemented by a subjective test which can often be made with surprising accuracy.

In older children and adults we try to secure intimations of the existence (or nonexistence) of astigatism by the observation of the fan chart while the patient is still under a fair amount of fog. At this point we confirm these intimations by the use of the cross-cylinder, and endeavor to secure a spherocylindric combination which yields not better than 6/10 vision, and which makes the cross-lines of the astigmatic chart appear "matched" (not in sharpness of outline, but having "an equal degree of blur"). Reduction of the sphere will now increase acuity and the cross-cylinder is again used to determine whether an increase or decrease in the cylinder is required. The cross-cylinder is now used (method of Jackson,[7] modified by Crisp [8]) to determine the precise axis. As a final check-up we make the round of the trial case with 0.12 D. spheres and cylinders. Having felt the need for greater refinement than is afforded by the use of the 0.12 D. cross-cylinder, we have had ground a cross-cylinder consisting of a —0.06 D. sphere on one side and a + 0.12 D. cylinder on the other. Given a low astigmatism, which has been perfectly corrected, an observant patient can detect no difference in the sharpness of the smallest letters in the two positions of the cylinder, but one cross-line of the astigmatic cross will be found to be better defined when the plus axis of this very weak cross-cylinder is parallel with the plus axis of the cylinder in the frame, and the other cross-line will be sharper with the cross-cylinder turned 90 degrees.

THE TEST UNDER CYCLOPLEGIA

The skiascopic estimate is placed on the patient, and the acuity noted. A weak sphere, either plus or minus, that improves vision, indicates whether the sphere in the trial frame is to be changed. The axis of the cylinder is determined by the cross-cylinder. The strength of the cylinder is also determined by the cross-cylinder. When vision has reached 6/7.5 +, the cross-lines (modified Lancaster chart or Friedenwald's chart) are displayed, with one axis corresponding to the position of the cylinder axis in the trial frame. The 0.12 cross-cylinder is used in the two positions. If there is a reversal in the distinctness of the cross-lines with a reversal of the 0.12 cylinder, it is an indication that the cylindric component is correct to less than 0.25 D. The sphere is reduced to yield 6/6 or 6/6 + acuity. The 0.06 cross-cylinder is used as before and the cylinder allowed to remain as it is in case of reversal in distinctness of lines, or changed in accordance with the indications of the cross-cylinder. Finally, the axis is redetermined by using the 0.25 or occasionally the 0.50 cross-cylinder.

There are some patients who experience difficulty in detecting the minute differences in lines and letters when the 0.12 and 0.06 cross-cylinders are used; under these circumstances we have found clear intimations by having the patient observe the smallest of Beach's Maltese crosses with these weak cylinders held in the two positions.

The postcycloplegic test is begun by placing the correction found under cycloplegia in the trial frame and making such modifications as may be necessary. The astigmatism is determined both by the cross-cylinder and astigmatic chart. We are inclined, in case of disagreement, to place the axis of the cylinder at the meridian indicated by the cross-cylinder. Nearly every eye with regular has also some irregular astigmatism, which is either not brought to light by observation of radiating lines or, if in evidence, it appears in a confusing way (as a group of clear lines, say at 10 o'clock and another group not at right angles to the first group). It is our belief that the cross-cylinder,

4. Beach, S. J.: Test Type for Refraction, Am. J. Ophth. **11**: 209 (March) 1928.
5. Lancaster, W. B.: Subjective Tests for Astigmatism Especially Astigmatic Charts, Tr. Am. Acad. Ophth., 1915, p. 167.
6. Friedenwald, J. S.: Sensitive Test Charts for Refraction, Am. J. Ophth. **7**: 8 (Jan.) 1924.
7. Jackson, Edward: The Astigmic Lens (Crossed Cylinder) to Determine the Amount and Principal Meridians of Astigmia, Ophth. Rec. **16**: 378, 1907.
8. Crisp, W. H.: A Plea for More General Use of the Cross-Cylinder, Tr. Am. Acad. Ophth. **27**: 178, 1922.

used in the manner described by Jackson and Crisp to determine the axis of the cylinder, insures the placing of the cylinder at an axis that will serve the patient best for visual acuity and comfort, although this axis may not coincide precisely with the axis as indicated by the line or lines selected as the most distinct on the astigmatic chart.

ATTITUDE OF EXAMINER

If an examiner is to have the greatest number of successes—and as a corollary, the fewest number of failures—he must study the personality of each patient. Therein lies the fascination of the art of refraction for any one who enjoys contacts with all sorts of human beings. As there is no man or woman so utterly depraved that there is not some bit of goodness lurking in the depths, so there is no one (unless he is an imbecile or still lower in the grade of intelligence) that cannot be aroused to some degree of intelligent cooperation in this test for glasses by the right "approach" on the part of the examiner. The examiner should have broad human sympathies and a clear understanding of the diverse attitudes of those who seek his services. He should be tolerant of all, even of those whose point of view differs markedly from his own. The effort to understand the other fellow will engender a sympathy between examiner and examinee that will tend to secure that very necessary cooperation without which the subjective test is likely to fall short of its most perfect results. Thus, too, is created in the patient a confidence in the examiner whose words of admonition and advice, when the new glasses are first worn, will not fall on deaf ears. To the patient with compound hyperopic astigmatism who has been carrying on with spheres or no glasses at all, the induction into his new compound lenses with, perhaps, the cylinder placed at an oblique axis, is a trying period and unless he be fortified with a full explanation of the discomforts and distortions which he is almost sure to experience he may discard his glasses forthwith, heaping maledictions on the head of the unfortunate examiner, whose reputation is bound to suffer by the oft repeated tale of how "I couldn't wear his glasses—they nearly drove me wild."

THE USE OF CYCLOPLEGICS

The controversy between the habitual users of cycloplegics, the occasional users and the nonusers, which has raged with much ardor for the last half century, still continues.

We are firm believers in the use of cycloplegics. Furthermore, we are convinced that their use should be extended far beyond the usually accepted limit of 40 or 45 years. On this point we are in agreement with Sumner.[9]

It is freely admitted that careful users of noncycloplegic methods often obtain results that are satisfactory to their patients. Any method that will enhance the precision of noncycloplegic refraction is worthy of commendation and it is for this reason that Dorland Smith's[10] method of cyclodamia has its distinct and useful place. Such a method, in our opinion, should be regarded as a useful adjuvant and should only rarely be relied on exclusively to determine the prescription.

Our belief based on long experience is this: A knowledge of the static refraction is necessary, not only for the present prescription, but also for the future management of the case. The behavior of the accommodation is often misbehavior; in other words, it is rarely possible to estimate in any given case whether we are dealing with a factor that is nearly constant or decidedly variable, and such uncertainty is abhorrent to one who desires to keep his feet on solid ground.

We habitually use a cycloplegic (homatropine) up to the age of 55 or even 60 and find two principal advantages in this practice: first, we put in temporary quiescence the accommodation which in so many of these uncorrected or partially corrected cases of presbyopia is in a state of pathologic tension due to the outrageous burden that has been imposed on the ciliary muscle; second, we often unearth small, but important, astigmatic errors which have eluded us in the preliminary test. It goes without saying that the mydriasis is not attempted if we have the faintest suspicion of glaucoma, and is always promptly counteracted at the conclusion of the test with physostigmine (eserine) or pilocarpine.

One who has been imbued with the many indubitable advantages of the shadow test and who, through constant practice, has become adept and accurate in his estimates, may reach such a degree of certainty that he feels that subjective tests are of minor importance; that if there is a discrepancy between the shadow estimate and the patient's choice of lens, there must be something wrong with the patient. Such a "mechanistic" view is no more tenable in the field of refraction than it is in the vast problems of the universe. The examiner should remember that it is his function to give comfort to a patient as well as to a pair of eyes, rather than to justify his superlative ability as a skiascopist. The subjective test remains today, as always, the court of last appeal.

It is our opinion that all children up to the age of 15 (and many older) should have the benefit of a test under atropine. The strength of the solution will vary with the age of the child. We prefer 0.5 per cent up to 10 years and 1 per cent over 10 years, used three times a day for at least three (preferably four) days prior to the test. Rather than forego the advantages of atropine, we prefer to adopt the plan of E. V. L. Brown[11] and use drops in one eye at a time, thus permitting the child to continue school work without interruption. We have never seen any disadvantages from this practice. For young persons with myopia we insist on a longer period of atropinization (one week or more) before making the test.

THE FINISHED PRODUCT

The mechanical art of the optician reaches its highest expression in the United States. More beautiful designs are constantly being developed. Prescription opticians are skilful in adapting the frame to the face so that the combination is harmonious. It is surprising, therefore, to note how frequently the "fitting" falls far short of an ideal. Rarely, indeed, do our patients who have been previously examined appear with frames which are not too wide or too narrow, the latter defect being almost universal in "pince-nez." The lenses are frequently too far from the eyes; they are placed too high or too low; possibly the upper edge of the lens comes in contact with the eyebrow or the lower edge with the cheek or nose. Only rarely is there the slight forward tilt of the lens, the so-called pantoscopic position, which is necessary in reading glasses to insure that there is a minimum of obliquity in looking through the lens. Bifocal segments are too often improperly centered; they are often too large to permit easy side

9. Sumner, P.: Remarks on Refraction, Am. J. Ophth. 5: 712, 1922.
10. Smith, Dorland: Refraction Under Cyclodamia, Am. J. Ophth. 9: 896, 1925.
11. Brown, E. V. L.: Personal communication.

glances through the distance portion. The adoption of small (13 or 14 mm.) round or D-shaped segments, with the lower edge terminating several millimeters above the lower edge of the frame, is a great boon to many who, literally, have found the old style large segments occupying from one quarter to one third of the total lens area, a serious "stumbling block."

In this paper we have purposely omitted consideration of the ocular muscles, as we desired to limit our discussion solely to problems of refraction. We do not neglect a careful estimate of the heterophorias, the nearpoint of convergence, convergence or divergence excess or insufficiency, and our refraction estimates are often modified by these findings. We have been especially impressed with the frequency of hyperphoria and thoroughly believe in its correction.

But, as Kipling would say, "that is another story," which we may tell at some future meeting of the section.

ABSTRACT OF DISCUSSION

DR. WILLIAM H. CRISP, Denver: No man who is not in love with his job can do good refraction, and if any young man is considering the study of ophthalmology and likes it all except refraction, he had better get another job, because he will not be fair to the great majority of his patients and he will not be fair to the profession of ophthalmology if he cannot do good refraction. I had an excellent example recently of the influence small differences in adjustment of the frame have on the patient's comfort. A man with high myopia and some astigmatism, who does a good deal of close work, had come to me for refraction and returned complaining rather vaguely of discomfort in using his glasses. He was disturbed by the reflection that occurs from the back to the front of the lens and then into the eye. I tilted his glasses down about 5 degrees more, and he called me in a day or two to say he was very comfortable. In the work of the American Board for Ophthalmic Examinations, in the refraction section, we have been distressed by one thing. I believe that every refractionist should be familiar with some precise test for measuring astigmatism other than retinoscopy. I was asked yesterday if we did not pass a man because he did not use a cross cylinder. I denied the imputation, but I believe every candidate should be able to use either the astigmatic dial or the cross cylinder. If we do not take care of our refraction work we shall certainly encourage the development of optometry as a profession.

DR. C. W. RUTHERFORD, Iowa City: I am going to mention some observations that have come to me in the training of young men to do this work. We have had until recently a two-year service. We are now trying the three-year plan. The first duty of an intern is to pay his way by becoming proficient in refraction, and the more proficient he is the more rapid will be his advancement. We concentrate on that feature. The intern is fortunate in that he has available consultation at all times. We do not accept any student for a short period. The report sheet contains everything that we believe is essential to writing a prescription, and some things that may not be essential but which we wish to know. These reports all come over my desk and they are checked item by item. After the intern has had about five or six months' experience we notice there is a tendency to leave out this little point or that, and unless corrected, the next week he is leaving out more little points. The remedy is to have him send for his patient to come back. It is an inconvenience that he does not want. He learns to do his work properly the first time. The reason the intern omits these points is that he gets overconfident and thinks he can understand his patient without going through all the tests. I want to emphasize that poor training is responsible for more inexpert refraction than any other one thing. If we kept these students down to facts, if we kept them from acquiring unwise procedures and slipshod methods, kept them right on the line, by the time their two or three years has expired they have acquired habits that are rather firmly established.

DR. LAURA A. LANE, Minneapolis: I believe that even in our higher institutions we do not devote enough time to teaching refraction. I had a great deal of difficulty when I first began because I worked with a preceptor, a man finely trained in his work, but who did not devote much time to teaching refraction. Refraction was the hardest subject for me before the ophthalmic board. I had to spend much extra time on this subject but it has paid in many ways. If we do good refraction work, it not only benefits the patient but extends further than we know. It makes the patient easier to live with and it brings us other patients. The authors spoke of glaucoma. I agree that the patient should be given every possible aid in the way of obtaining sight, and I am often surprised to have patients say they have been told that glasses cannot do them any good. I recently had an experience with a man who was a high-class mechanic, who had glaucoma. He was put into a home and told that there was no use to go to a physician. He had less than 3/60 vision in one eye. In six months he came up to 6/20 + without operation. He goes around alone and is a much happier person. Dr. Green suggests the use of homatropine up to the age of 55 or 60. I have not used it beyond 48, and I am glad to know that it can be used safely up to 60.

DR. E. L. JONES, Cumberland, Md.: I am happy to see this paper on the program. It will have a tendency to revive greater interest in one of the most important fields in ophthalmology. Twenty years ago I began to realize some things that are not commonly accepted, and one is the importance of absolutely exact astigmatic correction, the use of all the time and patience necessary, and most of all one's best efforts in refracting people who have reached or are long since past the presbyopic age. I am also pleased to see that the authors are coming out positively on the necessity of having the pupils somewhat dilated in these cases. It is impossible to get true fixation of the axis in the small pupils of old persons. I do not dilate the pupils with full strength homatropine as in young persons. I never do it without taking the tension, and omit the weak mydriatic if the tension is elevated. Eye-stress acts on the autonomic nervous system, causing cold hands and feet and many other things from disordered vital organs; and improvement in these persons oftentimes depends just as much on the exact correction of a little astigmatism, whether it is by itself or in the presence of several diopters of hyperopia or myopia, as on correction of larger defects. Many persons can be enabled to go on to useful lives by attention to these details just as much as by a major surgical operation for the removal of gallbladder or appendix when these cause ill health or invalidism.

DRS. HANS SCHROEDER, New Orleans: Refraction is highly interesting. It requires a thorough knowledge not only of anatomy, physiology and pathology, but also of physics, mathematics and psychology. More than a third of the cranial nerves go to the eye. This seems significant and leaves room for research on the relation of eye abnormalities to systemic diseases and vice versa, especially the significance of refraction in this respect.

DR. S. B. MUNCASTER, Washington, D. C.: I find the ophthalmometer a help in nine out of ten patients in making an examination for astigmatism of the cornea. It takes time to learn how to use this instrument. Dr. Bull taught me how to use the ophthalmometer in 1890 when he and Javal were perfecting the instrument. I believe I brought over the first ophthalmometer to this country.

DR. THOMAS D. ALLEN, Chicago: I want to protest against the high-handed methods frequently used by physicians, particularly those who dilate pupils and order glasses directly from the observations with the retinoscope without much trial case work, in saying to the patient, "These are the right glasses and you must wear them even if they are uncomfortable." The patient is the final judge. He comes to us for relief. After we have done our work carefully we should see that the patient gets into the hands of some one who can fill the prescription accurately. I should like to ask a question: Why is it we occasionally see a patient who should wear a cylinder say of 3 diopters, but who prefers a sphere even although after careful checking, with drops and without, no sphere is found?

DR. JOHN GREEN, St. Louis: I agree with Dr. Crisp that the tendency to determine the strength and axis of the cylinder solely by means of the retinoscope is to be deplored. Dr. Rutherford has outlined a correct method of teaching

refraction. The student is not primarily thrown on his own resources, he is not allowed to work out his own salvation but is made to consult with instructors in charge of the work. If he becomes careless he is quickly brought on the carpet and made to see that he cannot neglect a single detail of the test and be a successful worker. Dr. Lane has pointed out the change in disposition of some patients who have received the proper correction. I am sure that is perfectly true. We know that children, after receiving appropriate lenses, especially if they have compound hyperopic astigmatism, are tremendously altered, mainly because they are able to cope with their school tests. A child develops an inferiority complex if he cannot do as well as his fellows in school; but when we give him better functioning eyes he quickly gains confidence. Dr. Muncaster's praise of the ophthalmometer I agree with, with reservations. It is a useful instrument and a time saver in many instances; but the information thus gained should be regarded as merely suggestive. The astigmatism of any eye is a composite of several factors and it is not wise to pin too much faith on the corneal element alone.

SOME UNTOWARD EFFECTS OF ACETYLSALICYLIC ACID

R. W. LAMSON, PH.D., M.D.
AND
ROY THOMAS, M.D.
LOS ANGELES

It has been emphasized many times that allergic responses may be precipitated or aggravated by a wide variety of agents. Ample evidence has been published to prove the importance of drugs in this connection. The one that receives most frequent mention—probably because of its widespread use—is acetylsalicylic acid. Not a few patients are aware of their clinical sensitivity to this drug before they consult an allergist; this was true in three of the four cases mentioned here and usually it is advisable to accept the patient's statement without further experimentation. A few brief reports of cases may emphasize this and other points.

REPORT OF CASES

CASE 1.—Mrs. C., white, aged 54, complained of a cough, paroxysms of dyspnea with wheezing, and frequent attacks of bronchitis.

For fourteen or more years she had had attacks of bronchitis, and several years before her present illness her condition was diagnosed pulmonary tuberculosis of the fibroid type. The remainder of the history was not relevant to the present complaints.

Her family history was indefinite as to allergic tendencies.

In July, 1928, without associated symptoms, she experienced her first attack of paroxysmal dyspnea. This was of short duration and was not repeated for a month or two. In the spring of 1929 these attacks became more severe, and ultimately the symptoms were practically constant. The dyspnea was aggravated by exercise or by coughing. The patient stated that she was sensitive to acetylsalicylic acid, and this was borne out by her severe and protracted response to a small dose administered without her knowledge. Epinephrine usually afforded relief but was of little value in this attack.

Allergic tests failed to demonstrate any etiologic factor. A few months later the patient was urged by a friend to try a new "cure" for asthma. To have a margin of safety, she took only half of the dose usually recommended. The attack did not seem to be severe, and she tried this new remedy as a substitute for epinephrine. In a few minutes after the powder had been ingested the symptoms became acute and one of us (R. T.) was called, too late to see her alive, as she died in less than half an hour after her attempt at self medication.

CASE 2.—Miss C., aged 62, complained of a cough, severe dyspnea and some wheezing. Her present illness began about sixteen years ago in February, while living in Michigan. At first the symptoms suggested bronchitis. This was accompanied by some wheezing, which readily responded to simple remedies. Her history suggests a pollen etiology, but she has not had the allergic tests. She followed the advice of a friend and tried one 5 grain (0.3 Gm.) tablet of acetylsalicylic acid in an attempt to relieve a mild attack of dyspnea. Her description of the severe aggravation of the symptoms that followed is more than presumptive evidence that the drug was not well tolerated. The list of cultists she has consulted and the nostrums she has tried would occupy several columns. She was asked whether she had ever experienced an unpleasant reaction from any "patent medicine." In reply to this she vividly described her response to the "cure" mentioned in the previous history. She also took but a part of one powder, and the attack of dyspnea that followed was so severe that she became unconscious; she stated that the physician remained in attendance for several hours. She had no idea of the contents of this "cure," so a psychic response seems improbable.

CASE 3.—Mrs. M., aged 55, complains of recurrent attacks of itching of the nose and sudden nasal obstruction; frequent attacks of dyspnea with wheezing, and a cough which often results in her raising "tapioca" sputum.

In the past eighteen years her condition has become progressively worse, until she now has paroxysms of dyspnea practically every two hours. She is always worse in hot weather, is improved at the beach and usually obtains complete relief when on a fishing barge about two miles off shore. Other facts in her history point to some sensitivity, but thus far allergic tests have not been made.

A friend advised her to try the same "cure" used by the patients in the previous reports. The ingestion of one of these powders was followed by an attack of severe dyspnea which required epinephrine for relief. Her history is not definite with respect to drug idiosyncrasies.

CASE 4.—Mrs. H. M., aged 51, had symptoms suggesting a true hay fever in the spring and summer of 1913; she also experienced mild wheezing but no acute paroxysms. Occasionally she used acetylsalicylic acid for its analgesic effect. This drug always caused marked exacerbation of nasal symptoms. There are no indications of an abnormality of any of the more important systems.

The family history reveals that her mother may have had bronchial asthma.

Since 1925, the dyspnea and wheezing have become more severe, and she was not expected to recover from one or two attacks. Allergic tests have failed to reveal any etiologic agent. She, also, was advised to try the "cure" under discussion. One powder, employed to relieve a mild paroxysm, markedly aggravated her symptoms. Five hours of self medication afforded no relief. A physician finally interrupted the attack after hypodermic medication. She was not then aware of the composition of the powder.

The nostrum referred to in these case histories is "M. Matte's German Asthma Powder," which is extensively used by asthmatic patients in this territory. A communication addressed to the Bureau of Investigation of the American Medical Association brought the reply that preliminary and qualitative tests showed the presence of acetylsalicylic acid and caffeine. Bromides, iodides and local anesthetics were not found. There is nothing on the label of these powders to indicate their composition, but it would appear that the two ingredients caffeine and acetylsalicylic acid are the most significant and possibly the only active ones in the nostrum.

SUMMARY

1. Drug idiosyncrasies in allergic patients are not infrequent. An abnormal response to acetylsalicylic acid is probably more common than to any other drug.

2. Nostrums containing this compound are not "harmless" from the standpoint of the allergic individual. Four cases are reported in an effort to substantiate that point of view. One patient died within a short time after taking a small dose of this nostrum.

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A CONDITION SIMULATING HUMAN SCLERODERMA IN RATS INJECTED WITH PARATHYROID HORMONE

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In the course of the collection of experimental data on rats injected with parathyroid hormone [1] it became evident that young suckling rats receiving in some cases only a single injection of 5 units of parathyroid extract intraperitoneally develop within some days a specific skin disease.

This condition presents itself first as a hardening of the skin on the back, extending bilaterally from the head to the lower border of the ribs. Within two or three days the hair over these areas begins to fall out and concomitant with these phenomena the skin becomes harder and thicker. Ulceration of these symmetrically arranged affected areas takes place in some parts, and finally after healing a bare, hairless, atrophic skin results.

When examined histologically, the areas under consideration show a marked hypertrophy of the fibrous tissue in the skin, between the epithelium and the layer of the hair follicles. The areas of fibrosis tend to degenerate, and in sections stained by von Kossa's method amorphous deposition of calcium may be seen in the degenerated and necrotic parts. The calcium deposition appears to be secondary to the initial fibrosis of the skin because large areas showing marked fibrosis are free from calcium deposition.

This condition in rats possesses striking points of similarity with the human diseases known as scleroderma and sclerodactylia, in which conditions there occurs a connective tissue hypertrophy in the skin, likewise mostly in symmetrical distribution, together with degeneration of this hypertrophied connective tissue and ulceration of the affected areas. Finally healing results in the atrophic skin over these areas.

A perusal of literature on this disease in man tends to indicate that scleroderma may be related to hyperparathyroidism.

The available reports in the literature tend to suggest that the parathyroids play a rôle in scleroderma, because in most cases the blood calcium is high. Calcification of the skin and the subcutaneous connective tissue has been reported in many cases,[2] and Weidman [3] has even reported calcification in the arteries in a newborn baby affected with scleroderma.

The present report offers further substantiation for the concept that hyperparathyroidism is related to scleroderma. It would seem that a number of human diseases of hitherto obscure origin are related to parathyroid malfunction. Osteitis fibrosa represents one manifestation of this condition, as Jaffe, Bodansky and Blair demonstrated. As this paper indicates, scleroderma seems to be another such manifestation.

It is perhaps of some interest in this connection to mention another condition which, in the light of experiments now under way, appears also to be related to parathyroid malfunction. This condition is known as marble bone disease (morbus Albers-Schönberg). In fact, the experimental observations indicate that a marked sclerosis with eburnation of the metaphyseal regions of the bones can be produced when parathyroid hormone is administered to young rats in increasingly graded doses. The condition resembles strikingly the marble bone disease seen in man. It is interesting to note that Péhu, Policard and Dufourt [4] described recently a case of marble bone disease with high blood calcium and marked hypertrophy of the parathyroids.

It would be interesting in the light of these observations to determine the effect of parathyroidectomy in the diseases mentioned.

From the Department of Bio-Chemistry, School of Hygiene and Public Health, the Johns Hopkins University.

1. The preparation used was parathyroid extract-Collip (para-thormone-Lilly), provided by Eli Lilly & Co.

2. Longmead, F. S.: Proc. Roy. Soc. Med. **12**: 94, 1919. Weber, F. P.: Brit. J. Child. Dis. **10**: 97, 1913. Thibierge and Weissenbach: Ann. de dermat. et syph. **11**: 129, 1911. Scholefield and Weber: Brit. J. Dermat., September, 1911. Davis: Am. J. Dermat. & Genito-Urin. Dis., November, 1912. Olson, G. M.: J. Cutan. Dis. **35**: 96 (Feb.) 1917.

3. Weidman, F. D.: Necropsy Findings in a Case of Congenital Scleroderma and Sclerodactylia, Arch. Dermat. **1**: 375 (April) 1920.

4. Péhu, M.; Policard, A., and Dufourt, André: Presse méd. **39**: 999 (July 4) 1931.

THE CONTRARY THERAPEUTIC AND SEX RELATIONSHIP OF SYPHILIS AND TUBERCULOSIS

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AND
RUDOLPH HECHT, B.S.
CHICAGO

It might seem strange that an apparently significant though commonplace therapeutic phenomenon associated with the two most prevalent chronic diseases—syphilis and tuberculosis—should not be clearly recognized in clinical practice. That it is not so recognized can be due either to its very obviousness or to the fact that one so frequently thinks of the therapy in these two diseases from the purely specific, the etiotropic, point of view that the underlying autogenic mechanisms involved in clinical improvement are forgotten.

Successful therapy of syphilis, apart from the consideration of the primary lesion, involves the exposure of the spirochete. The physician seeks to "dig it out" as it were, and he does that by the catabolic activity of the alteratives—iodides, arsenicals, mercury, shock reactions. Activation phenomena, inflammation and digestion are encouraged. Protective tissue barriers are broken down by removing connective tissue and by increasing permeability of membranes. When exposed, the spirochete is apparently destroyed either by serum action (lysin, lipolysis, proteolysis) or by direct cellular effects.

The successful therapy of tuberculosis—and for the moment we would limit the discussion to pulmonary tuberculosis—is diametrically the reverse of this. Therapeutic measures that expose the tubercle bacillus, i. e., the catabolic phase of alterative therapy in the sense that we have just used it, bring about prompt activation, cavitation, dissemination, and death of the patient. Recognized therapy seeks rather to enhance the isolation of the virus, to accelerate the formation of connective tissue defense. When alteratives are used, the dosages are such as are presumably followed by anabolic effects.

We believe that the clinical appreciation of these therapeutic differences is too well established to require elaboration.

But if this antipodal therapeutic behavior is a fact, one might anticipate similar divergences of clinical reactivity to natural biologic alterations occurring in the

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body, which may perhaps be interpreted from the same point of view.

Differences in the clinical behavior observed in syphilis and tuberculosis incidental to the sex of the patient form the basis for the present discussion.

Syphilis in women, as compared to that in men, is relatively benign. Quite apart from the fact that the primary lesion so often escapes detection, syphilologists have frequently commented on the fact that the secondary clinical manifestations are comparatively mild. And, of course, syphilis of the central nervous system occurs approximately in a ratio of 1 to 3 as compared to the male.

On the other hand, the female is much more susceptible to pulmonary tuberculosis. The death rate rises to a distinct peak by the time the patient is 15 years of age and remains much higher throughout the young adult period (chart 1).[1] The clinical recognition of this sex difference finds its expression in the old aphorism that "the tuberculous woman is killed by her menstruation" and in this marked susceptibility (which, incidentally, becomes apparent after the tenth year), and in the resulting death of the young female one can readily recognize the basis for the gradual increase in the resistance of a tuberculosis saturated population by the effectual method of selective removal of the susceptible female strain before reproduction.

Clearly, then, one finds a recognized therapeutic antagonism cropping out in the sex difference, the female being relatively resistant to syphilis and relatively susceptible to tuberculosis.

Fundamental differences inherent in the menstrual cycle of the female must be considered in the study of this interesting phenomenon, and in chart 2 we illustrate only some of the biologic alterations that we believe are of importance for the problem.

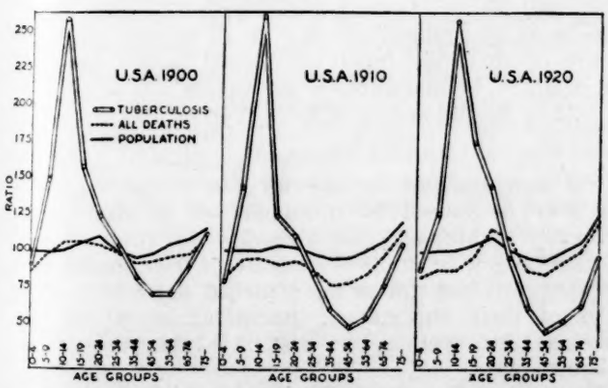

Chart 1.—This chart, prepared by Lloyd Arnold, illustrates the relative female mortality for tuberculosis as compared to the male mortality for different age groups (double line). The broken line represents the relative proportion of females in all deaths for each age group as compared to the males. The solid line represents the proportion of living females to males in the population in the various age groups. The proportion of females to males is indicated throughout on the basis that males are 100 per cent.

Arbitrarily dividing the cycle into two parts, (1) from the midmenstruum to the menstrual period (premenstrual period) and (2) from the menstrual period to the midmenstruum (postmenstrual period), we find premenstrually:

(*a*) A marked increase in capillary permeability.
(*b*) A relative increase in acidity.
(*c*) A reduction in the intermediary oxidation.
(*d*) An increase in the blood and tissue chloride with fluid retention.
(*e*) A decrease in cholesterol.
(*f*) A decrease in the carbon dioxide content.
(*g*) An increase in the activity of proteolytic and lipolytic enzymes.
(*h*) An increase in hormone activity (thyroid, suprarenals, pituitary, sex).
(*i*) Autonomic instability.

In the postmenstrual period these alterations are diametrically reversed. Of course, the magnitude of the changes varies in different individuals, but the general character of the rhythm is quite uniform (chart 2).

We have mentioned but a few of the changes that are observed. Many more are perhaps of importance, including the calcium and potassium ratios, the blood sugar, and the amount and proportion of blood proteins.

The tuberculosis of the female is clinically more active premenstrually (temperature, tendency to hemorrhage, physical manifestations, symptomatology); postmenstrually it improves.

We can readily account for the increased activity. Increasing acidity of the tissues (evident in changes in the p_H, carbon dioxide content and intermediary oxidation), increasing capillary permeability, salt and water retention, and the activation of proteolytic enzymes increase the focal reactivity; decrease in cholesterol apparently lessens detoxication; the autonomic instability associated with the hormone changes accounts for the marked vasomotor fluctuations with the resulting alternation of vascular spasm and hyperemia. In this the relatively passive pulmonary circuit merely reflects changes taking place in the splanchnoperipheral balance of the distribution of blood.

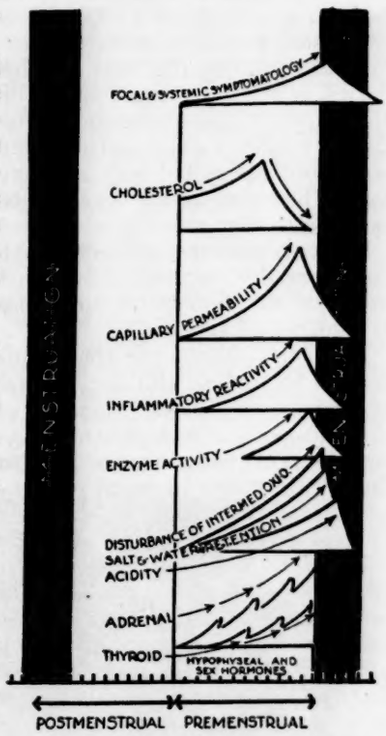

Chart 2.—Diagrammatic scheme to indicate some of the constitutional, hormone and chemical changes and their relation to the menstrual period. In the case of the hormones, there are apparently definite fluctuations in the secretion from the thyroid and suprarenal glands. This becomes evident from the autonomic instability that is apparent during the premenstrual phase.

The inflammatory reactivity, as measured in irritability of cells and permeability of capillaries, is distinctly enhanced. For the labile tuberculous process this means increased digestion, absorption of toxic materials, distribution of the virus (a premenstrual bacillemia has been demonstrated) a distinctly unfavorable constellation from the point of view of the clinical improvement of the patient.

Practically these changes correspond to those that are induced when a "shock" reaction, no matter how mild in degree, takes place in the patient, as, for instance, with the various forms of nonspecific therapy.

But the same biologic reorientation takes place every month with the syphilitic female. She, too, begins to "activate" her lesions, has a greater inflammatory

1. Chart 1 illustrates this point very clearly with American statistics.

reaction at the site of the accumulation of virus, and exposes and disseminates the virus.

Granted this profound and definitely periodic biologic upset and its inevitable effect on the existing tubercle and on the syphilitic lesion, the question immediately comes up, Why should the tuberculous woman die and the syphilitic woman improve? The answer must lie in the character of the virus. The activation of the tuberculous lesion involves not only profound intoxication but the dissemination of the virus. And this dissemination takes place at a time when the endothelium of the body is apparently in a receptive condition for implantation and proliferation of the bacilli. It must also be kept in mind that the virus of tuberculosis in its varied forms is relatively resistant to destructive influences. Contrasted to the tuberculous virus, the spirochete succumbs readily to humoral or cellular influences under conditions associated with the activation of inflammation. Therapy, as we have pointed out previously, is directed to that end.

Biologic changes incidental to the sex cycle in the female readily account for the peculiar lack of resistance of the female to tuberculosis and the relative benignancy of syphilis.

In many respects the change in the menstrual cycle can be compared with the effects that one sees with nonspecific or "shock" therapy. In both instances a disturbance is found in acid base equilibrium, in permeability, in endocrines and in the autonomic apparatus. In both instances identical effects on the localized foci of these two chronic diseases are found. Repeated "shock reactions" produced by peptone injection in tuberculosis induce activation, virus dissemination and death, as Holler determined. This is true, too, with large doses of biologic or chemical specifics such as tuberculin or "Sanocrysin." But repeated "shock" effects in syphilis are often followed by amazingly rapid therapeutic success in resistant syphilitic lesions and by some syphilologists are included as a routine in treatment, milk injections being given alternatingly with arsenicals or mercury. Engman and his associates are engaged in a study of the subject in this country.

It is probable that autonomic—and with it endocrine and chemical instability—may also influence the course of a syphilitic infection in the male, and Hecht [2] has sought confirmation by an analysis of the percentage of positive Wassermann reactions in individuals with genuine asthma, assuming that with each attack some degree of biologic shock effect will be associated, which ultimately must have an effect on a preexisting syphilis.

On this assumption the incidence of positive serum reactions (Wassermann or Kahn) should be less among asthmatic patients than the normal expectancy for comparative groups of the population.

In analyzing the results for Cook County Hospital, Hecht [2] found between 17 and 18 per cent of positive reactions for the years 1927 to 1932 for all services, including male and female. The true asthmatic patients, however, showed only positive reactions from 3 to 5 per cent. While, of course, not conclusive, the evidence seems to point in the direction that has been suggested.

SUMMARY

The established therapeusis of tuberculosis and of syphilis is antithetical. The alteratives,[3] in which category nonspecific therapy may be included, used in dosages followed by catabolic effects, are effective in syphilis but harmful in tuberculosis.

The biologic changes incidental to the female sex cycle have a corresponding contrary effect on these infections. Tuberculosis in the female is more malignant, syphilis generally more benignant, the reasons being found in the enhanced inflammatory reaction of the premenstruum.

The sex liability of the tuberculous patient finds clear expression in the mortality curve, while the relative protection of the syphilitic female is demonstrated in the greatly lessened incidence of neurosyphilis. Fundamentally, of course, the difference in the ultimate clinical effect of the identical biologic cycle lies in the ability or disability of the tissues and fluids of the body to dispose of the virus which is disseminated when premenstrual activation of localized lesions takes place.

2. Hecht, Rudolph: The Wassermann Reaction in Asthma, Illinois M. J. **59**: 366 (May) 1931.

3. We realize that the term alteratives is no longer in vogue among pharmacologists, but from the therapeutic point of view the classification is distinctly justifiable. Depending on the dosage, either anabolic or predominantly catabolic effects may be elicited.

HYPOPHYSEAL CACHEXIA (SIMMONDS' DISEASE)

WITH REPORT OF THREE CASES

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AND
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In 1914, Simmonds [1] reconstructed from necropsy studies of two cases the clinical syndrome which results from destruction of the anterior lobe of the hypophysis. Since that time a number of cases have been described in the German literature, although none appeared in the English language until Graham and Farquharson [2] reported four cases in 1931.

Clinically the syndrome is characterized by premature senescence, generalized atrophy of all tissues, gradual failure of the body functions, mental torpor, apathy and death. The literature on the disease was reviewed to 1922 by Knoll,[3] and to 1930 by Werner Merz.[4]

ETIOLOGY

The destruction of the anterior lobe of the hypophysis may be caused by a number of primary and secondary conditions, and a review of twenty-four selected cases with autopsy observations from the literature suggests the following principal factors in the order of their importance: puerperal sepsis (septic embolus), 9; syphilis, 5; cyst, 4; tuberculosis, 2; unknown, 4.

The outstanding cause is that resulting from the infected embolus of puerperal sepsis, although ten of the twenty-four cases selected were in males. Three of the four cases reported by Graham and Farquharson [2] were from this cause. In Simmonds' original cases the arteriola propria hypophyseus (Benda) was involved; in a separate discussion of this phenomenon he says [5] that emboli are not rare in the gland, and while they cause small nests of infection in the neurohypophy-

* From the Department of Internal Medicine, University of Michigan Medical School.

1. Simmonds, Morris: Ueber Hypophysisschwund mit todlichem Ausgang, Deutsche med. Wchnschr., 1914, p. 401; Ueber Kachexia hypophysaren Usprungs, ibid. **421**, 190, 1916.

2. Graham, D. A. L., and Farquharson, R. F.: Simmonds' Disease, Tr. A. Am. Physicians, 1931; abstr. J. A. M. A. **96**: 1987 (June 6) 1931.

3. Knoll, W.: Beitrag zum Bilde der hypophysaren Kachexia, Wien. Arch. f. inn. Med. **4**: 555, 1921.

4. Merz, Werner: Beitrag zur Frage der Enktehang der hypophysaren Kachexia, Frankfurt. Ztschr. f. Path. **40**: 452, 1930.

5. Simmonds, Morris: Ueber Embolic processes in der Hypophysen, Virchows Arch. f. path. Anat. **217**: 226, 1914.

sis, in the anterior lobe such emboli may remain without reaction but give rise to anemic infarcts because the vessels of this part may be looked on as end arteries. In neither of Merz's [4] two cases was the entire lobe destroyed, but the eosinophilic cells were shrunken, while Budde [6] says that metastatic tumors invading this lobe increase the cachexia beyond that ordinarily produced by cancer. Many authors conclude that in certain cases there is no outstanding contributing cause of the disease except "endogenous constitutional factors."

Fig. 1.—Patient 1, at age of 21, weighing 170 pounds (77 Kg.).

SYMPTOMATOLOGY

The basis of symptoms of Simmonds' disease is progressive atrophy of tissue. Weakness, loss of weight, rapid aging, falling hair, anorexia and loss of sexual function are prominent symptoms. An initial polyuria and polydipsia are frequently early symptoms and are emphasized in four of the twenty-four cases reviewed. The loss of sexual function is always present and is usually an early symptom. These two conditions are prominent in other diseases of the hypophysis and they serve only to direct attention to this gland.

Physical examination shows a shiny dry atrophy of the skin, sometimes confused with that of the thin subject of myxedema, a loss of body hair, the marked loss of weight, but most strikingly the premature aging of the patient. In men the testes are atrophic, the beard is scanty, the voice is hollow, and muscular strength is greatly diminished. An underlying pathologic process (i. e., syphilis, tuberculosis) often masks the conditions found with the exception of the premature senility. In addition, there is a definitely lowered basal metabolism, marked secondary anemia, and often a disturbance of the sugar metabolism. The prognosis is by no means fatal, particularly in cases resulting from syphilis, since Simmonds followed a case for eighteen years, and Oppenheimer [7] has had one under observation for twenty years.

Case 1 is typical of Simmonds' disease presumably due to acquired tertiary syphilis:

CASE 1.—*History.*—A man, aged 47, an American laborer of Irish extraction, entered the University Hospital outpatient department, April 2, 1930, complaining of weakness, stiffness of the joints and constipation.

The patient's father died of uremia at 75 years of age, and the mother of apoplexy at 78. Aside from the tendency to arterial disease, the family history was negative.

The patient contracted syphilis and buboes at the age of 22, and was treated by means of mercury rubs at Hot Springs, Ark. Heavy indulgence in alcohol at the age of 42 led to sanatorium care, at which time the patient's right arm became temporarily paralyzed.

The present illness began following treatment for acute alcoholism four years before admission, when the patient weighed 172 pounds (78 Kg.), and his appearance of youthfulness caused him to be taken for his daughter's brother. The symptoms began rather acutely with weakness, followed by polyuria. He was admitted to a hospital at this time for treatment of polyuria, it being necessary for him to drink "a quart of water every few minutes." This symptom subsided in four weeks, and a gradual loss of weight and appetite supervened, the patient losing in two years from about 170 to 102 pounds (46.3 Kg.). For a time following the onset he was so weak that he could not get out of bed without assistance. Stiffness of the joints was prominent. Sexual powers disappeared immediately after the onset of the illness, and his appearance changed to that of a man of 60 years. The previously abundant body hair was lost. When first seen, the patient stated that he shaved every two weeks, felt cold and was quite unable to keep warm.

Examination.—The physical examination showed the patient's emaciation and his slow mental reactions; he was much older in appearance than his age indicated. The skin showed marked atrophy (Dr. Wile). The hair of the scalp was grayish and thin and consisted only of a border fringe. The body hair was absent with the exception of a slight amount on the forearms. The nails were extremely thin and fragile. Arcus senilis was present and the mouth was edentulous. The thyroid gland was palpable and was normal in size. The thorax was asthenic. The lungs were clear. The heart was perpendicular and not enlarged. The blood pressure was 98 systolic and 70 diastolic. The heart rate at rest was 72 per minute. The abdomen was scaphoid, with no organs palpable. The testes were markedly atrophic. The deep reflexes were present. There were no signs of syphilis of the central nervous system and no general or regional glandular enlargements.

Laboratory examination revealed: urine, clear, highest specific gravity 1.030; peripheral blood: hemoglobin (Sahli) 75 per cent; red blood cells, 3,600,000; white blood cells,

Fig. 2.—Patient 1, at age of 47, weighing 103 pounds (46.7 Kg.).

4,600; polymorphonuclears, 59 per cent; lymphocytes, 35 per cent; mononuclears, 2 per cent; eosinophils, 5 per cent. There was moderate anisocytosis and moderate central achromia of the erythrocytes. The Kahn test was 1+; repeated, negative. The basal metabolism was —36 per cent. The pulse rate was 58. The stool was negative for parasites or ova and for occult blood. Roentgen studies revealed that the gastro-intestinal tract showed an atonic, ptotic, stomach without evidence of gastro-intestinal pathologic changes (Dr. Hickey). Examination of the chest revealed asthenic cage, some thickening of the

6. Budde, Max: Zur Kenntnis der bosartigen Hypophysengeschwulste und hypophysaren Kachexia, Frankfurt. Ztschr. f. Path. **25**: 18, 1921.
7. Oppenheimer, B. S., in discussion on Graham and Farquharson (footnote 2).

right apical pleura. There was emaciation. The heart was of the "drop" type, normal in size (Dr. Pierce). The skull was normal except for calcification of the pineal body; the sella turcica was normal (Dr. Hodges). Gastric analysis showed no free hydrochloric acid in any specimen (after histamine, 0.1 mg.). Dextrose tolerance tests were not done, and an examination of the spinal fluid was omitted.

Fig. 3.—Patient 3, at age of 22, weighing 120 pounds (54.4 Kg.).

The case showed the following manifestations consistent with the syndrome of Simmonds' disease: premature senility, atrophy of skin and testes, marked loss of weight, low basal metabolism, loss of body hair, anemia, weakness, loss of appetite, chronicity, and subnormal blood pressure.

Course.—The case was diagnosed as myxedema and latent syphilis, and the patient was admitted to the ward for treatment with desiccated thyroid gland. The basal metabolism was increased to —1 per cent with a pulse of 112, but without subjective improvement in symptoms. After the paper by Graham and Farquharson and the subsequent discussion was heard, the diagnosis of Simmonds' disease suggested itself immediately, and further studies were carried out with this diagnosis in mind. Treatment has been continued with bismuth and iodide, and desiccated thyroid gland, and the patient has improved in cycles sufficiently to be ambulatory. By dietary treatment his weight has increased to 114 pounds (51.7 Kg.), and constipation is avoided. There has been no change in appetite or in strength.

Case 2 illustrates many features of Simmonds' disease as well as some features of acromegaly:

CASE 2.—*History.*—An American laborer, aged 55, entered the University Hospital, Dec. 17, 1925, complaining of weakness.

The father died of arthritis at 71 years of age and the mother died of apoplexy at 65. Aside from a tendency toward arthritic diseases, the family history is negative.

The patient stated that he did not have syphilis and gonorrhea by name and symptom. Little alcohol had ever been used.

At the age of 35 the patient began to notice weakness. Associated with this symptom he had frequent attacks of nausea and vomiting, which lasted eight years. Numerous sick headaches were present with pain over the right eye and in the crown of the head. His weight during this time decreased from 203 to 170 pounds (from 92 to 77 Kg.). At the age of 41 he first noticed diplopia, which had persisted periodically since. His headaches were relieved by glasses. During the past fourteen years he had noticed that he had slept more than normally. His bowels had been moderately constipated during the past twenty years. During the past twelve years he had noted a loss of 10 pounds (4.5 Kg.) and a marked disappearance of his facial hair, so that it was necessary to shave only once a week. During the past four years the pubic hair had become scanty, and the axillary hair disappeared three years before entrance to the hospital. Since the onset of his trouble he had been compelled to do lighter work and during the past six months his weakness had been so great that he spent most of his time in bed.

The patient was married at 20. His wife was living and well. This union produced five pregnancies; two children, living and well, and three miscarriages. During the past ten years the patient noticed that his sexual capacity had become limited.

Examination.—The patient was fairly well developed and had a blank facial expression. The skin appeared to be flabby but otherwise was normal. The hair of the scalp was fine in texture. The body hair was absent in the axillae and on the chest and was scanty over the pubes. The pupils were round and equal, but the left pupil was sluggish in its reaction. There was failure of convergence of the right eye and a definite blindness of the temporal half of the right eye. The teeth showed much caries. The voice was not hoarse. The thyroid gland was palpable. There was a dorsal kyphosis of the thoracic vertebra. The lungs were clear. The heart was slightly enlarged. The blood pressure was 130 systolic and 70 diastolic. The rate was 84 and the rhythm regular. The abdomen was normal in appearance. No glandular enlargements were palpable. No signs of syphilis of the central nervous system were present.

Laboratory examination revealed the urine normal at all times; hemoglobin, 65 per cent (Sahli); red blood cell count, 4,420,000; white blood cell count, 6,300; polymorphonuclears, 51 per cent; lymphocytes, 39 per cent; mononuclears, 6 per cent; eosinophils, 3 per cent, and basophils, 1 per cent. The red cells were normal except for moderate achromia. The Wassermann test was negative. The basal metabolism varied from —18.6 per cent on the first determination to —23 per cent (Tissot). The spinal fluid was normal. Detailed studies of the sella turcica showed practically complete absorption of the lime salts in the lower and posterior clinoids. The destruction was suggestive of neoplasm. Examination of the fundus by Dr. George Slocum showed angiosclerotic changes in both eyes with marked edema. The right eye showed optic atrophy and a loss of convergence. The visual fields showed a right temporal hemianopia. The dextrose tolerance test was: fasting, 0.083 per cent; first hour, 0.114 per cent; second hour, 0.087 per cent; third hour, 0.083 per cent. The urine was normal in all specimens during the course of the test. The diagnoses of pituitary tumor, right temporal hemianopia and peripheral arteriosclerosis were made. The patient died very suddenly, and necropsy showed the following:

Fig. 4.—Patient 3, at age of 41, weighing 100 pounds (45.4 Kg.).

Necropsy.—The general nutrition was good over the abdomen and thorax but showed some wasting over the extremities. The facies was thin and somewhat acromegalic in type. There was atrophy of the muscles of mastication. The right eye showed a superior lateral strabismus. There was a moderate increase in the size of the thyroid gland. The thorax was essentially normal. The skin was inelastic and soft. The hair of the head was abundant and fine in texture. The beard was scant and fine. The axillary hair was absent. The pubic hair was scant, fine and delicate. There was a yellow purulent discharge from the right ear. The head was normal. The brain was not sectioned. The hypophysis was represented by a large tumor

mass, completely filling the large sella. It was very soft in consistency and was pedunculated. The infundibulum was much thickened. On removal, the mass was necrotic and was partially destroyed. There was compression and thinning of the right optic nerve. It was no larger than a few strands of thread. The left optic nerve was also somewhat thinned. The petrous portion of the temporal bone was removed, disclosing a right purulent otitis media and mastoiditis. The gross examination of the thorax and abdomen and their contained organs was negative except for edema, congestion and a seropurulent exudate expressed from the right lung. The pelvis showed an apparently normal penis and scrotum. The testes showed moderate fibrosis.

There was a malignant adenoma of the pars intermedia (adenocarcinoma) of the pituitary gland. Abundant colloid was present. There was marked hypoplasia of the heart; atherosclerosis of the aorta; congestion, edema, and areas of healed chronic fibroid pneumonia of the lungs. The bronchial nodes, thyroid, spleen, small intestine, appendix, stomach, pancreas, liver, prostate, seminal vessels and bladder were essentially normal. The suprarenals showed extreme congestion and small inflammatory infiltration of the cortex. The testes showed complete aspermatogenesis. Patches of fibroid atrophy were present not resembling syphilitic areas. The stroma was relatively increased and edematous. The interstitial cells were markedly atrophic.

The clinical diagnosis was pituitary tumor, hypopituitarism, bronchopneumonia, acute right-sided otitis media and mastoiditis.

The pathologic diagnosis was malignant adenoma of the so-called pars intermedia (adenocarcinoma) of the pituitary gland; hypopituitarism; aspermatogenesis; atrophy of the bronchial nodes; old obliterative appendicitis; old fibroid pneumonia and localized pleural thickenings; nephrosis with glomerular hypertrophy; general passive congestion, and parenchymatous degeneration.

Although case 2 presents some features of hyperpituitarism and some of hypopituitarism, many features of Simmonds' disease are present. The process probably began as a nonmalignant adenoma of the hypophysis and as it increased in size it eventually destroyed the anterior lobe. The weakness extended over a long period and apparently was the first symptom; the loss of sexual powers and the loss of body hair were the last to appear. The appearance of premature aging was not striking, owing to the retention of body weight. Other features of senility praecox were present, however. This case illustrates Erdheim's[8] belief that adenomas causing acromegaly have the symptoms of both hypopituitarism and hyperpituitarism.

CASE 3.—*History.*—A white woman, aged 41, a native of Michigan, complained of weakness and loss of weight. The father died of a stroke at the age of 70 and the mother died of pneumonia at 60.

After numerous heterosexual experiences the patient was married at 20, from which union there is one child living and well. The first pregnancy was followed by a series of miscarriages.

The menstrual periods ceased at the age of 26. At 30, she noticed a lack of sweating, and eczema of the skin during the winter months. At this time she worried about her appearance of "growing old" and of increasing weakness. At 36 she experienced a "stroke," which left a residual paralysis of the right side of the face and deviation of the right eye. Recently there had been nasal trouble, a feeling of constant chilliness, weakness, poor appetite, loss of libido, and loss of memory. There was a total loss of weight of about 20 pounds (9 Kg.) during her illness.

Examination.—The patient had the appearance of a woman of 60, emaciated, weighing 80 pounds (36.3 Kg.). The skin was atrophic, dry and cold. The eyebrows were sparse; there was no body hair; the hair on the scalp was dry, grayish black and fairly abundant. The eyes showed a divergent attenuating strabismus on the right; the pupils were fixed and there was keratitis. There was marked oral sepsis. There was syphilis of the buccal cavity and of the soft palate. There was a speech defect similar to that of dementia paralytica. The reflexes were normal. The blood pressure was 120 systolic and 70 diastolic.

Laboratory examination revealed: basal metabolism, —28; pulse, 68; Kahn test, 4 plus; spinal fluid, negative; hemoglobin, 90 per cent (Sahli); red blood cells, 4,740,000; urine, clear. Dextrose tolerance test: fasting, 95 mg. per hundred cubic centimeters; first hour, 102; second hour, 90; third hour, 83.

Manifestations indicative of Simmonds' disease were: premature senility, atrophy of skin, loss of body hair, loss of libido, mental deterioration, low basal metabolism, loss of weight, weakness, and the sugar tolerance curve.

COMMENT

The disease can be recognized clinically only by having in mind the possible etiologic factors and the

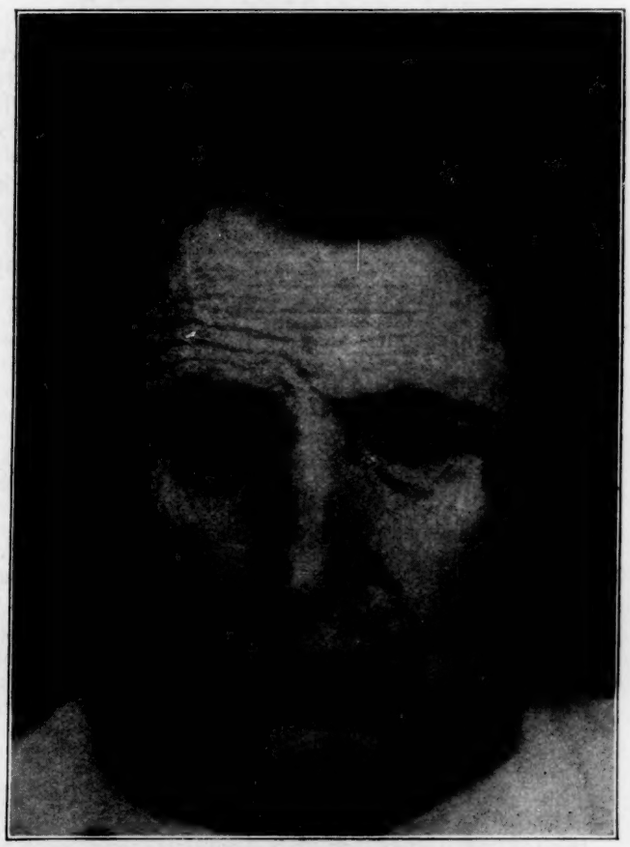

Fig. 5.—Patient 3, at age of 41.

chief presenting manifestations, which are premature aging together with generalized atrophy of the skin and other organs. Mental lethargy might be due in part to secondary nutritional disturbances and to a low metabolism. The latter, with changes in the sugar tolerance curve, is seen frequently in tumors of the pituitary gland not associated with the Simmonds syndrome. Erdheim[8] believes that the eosinophilic adenomas resulting in acromegaly are not examples of total hyperpituitarism, and that they may have certain common elements with Simmonds' disease, such as loss of strength, marasmus and a genital disturbance.

Merz[4] has reported Simmonds' disease and exophthalmic goiter in the same patient with autopsy observations. There is considerable discussion in the literature about the relation of hypophyseal cachexia to involvement of the other endocrine glands. Several cases have

8. Erdheim, J.: Zusammenfassung über die Hypophysengewachse und Krankheiten, Ergebn. d. Path. **21**: 547.

been mistaken for myxedema, and one experienced clinician on our staff remarked that case 3 was one of polyglandular dystrophy. The syndrome should be looked for in all tumors of the hypophysis, five cases due to cysts being reported in the continental literature. The clinical picture undoubtedly must be based on the absence of the specific growth secretion from the anterior lobe even though such a picture has not been presented in experimental animals. Generalized hypertrophy was demonstrated by Evans when he administered the secretion of the lobe to rats, and general atrophy is that seen in disease which destroys the glandular element in man. It seems established from a number of German autopsy reports that neither the posterior lobe nor the pars intermedia and related cells of the floor of the fourth ventricle are involved, only the eosinophilic cells being destroyed.

SUMMARY

1. An ambulatory case of hypophyseal cachexia, Simmonds' disease, in a man, aged 47, was characterized by an initial diabetes insipidus, premature senility, low basal metabolism and generalized atrophy. The history and serologic observations suggested syphilis as the etiologic factor.

2. A second case showed many characteristics of Simmonds' disease due to a tumor of the pars intermedia (malignant adenoma of the pars intermedia).

3. In a third case characterized by premature senility, syphilis was the etiologic factor.

Clinical Notes, Suggestions and New Instruments

THE PROLONGED USE OF SALYRGAN AS A DIURETIC: REPORT OF TWO HUNDRED AND SEVENTY INJECTIONS IN FIVE YEARS IN ONE CASE

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Mrs. S., aged 58, a widow, seen, May 19, 1925, was short and very broad and weighed 280 pounds (127 Kg.). Her mother died of heart trouble and was also short and very stout. One brother, who was a little over 5 feet (152 cm.) tall, had a tremendous breadth of shoulders and weighed 230 pounds (104 Kg.). He had severe chronic nephritis with hypertension and died three years later. The father, who did not have this type of body build, died of an unknown cause.

The patient had been short of breath for several years, seldom walked, and had not been down town in five years. Her feet had been swollen for a considerable time; cough and sputum were present. During the past ten days the dyspnea had increased; she felt the beating of her heart in her throat and had been in bed three days.

The skin was flushed, the lips were cyanotic, and dyspnea was marked. The blood pressure was 190 systolic and 135 diastolic. The heart was considerably enlarged to the left; the sounds were clear and regular, with a waxing and waning of rhythm, and the rate was 170. The pulse was irregular, owing to a pulse deficit. The abdomen was very obese and the liver apparently much enlarged. Edema of the legs was present to the knees.

I withdrew 200 cc. of blood by venesection, after which breathing became easier. Large doses of digitalis were given. In a few days the rapid but regular heart action (probably auricular flutter) slowed to 120 and showed a disorderly irregularity of the fibrillation type. In ten days the rate fell to 80, and she was constantly kept under digitalis thereafter. Theophylline and theobromine had no influence on the edema. She was able to be up most of the time and in fair comfort but showed no striking improvement. In February, 1926, I aspirated the right chest and withdrew 2 quarts of straw colored fluid. She was then given ammonium chloride, 10 Gm. every twenty-four hours, followed by an intramuscular injection of 1 cc. of novasurol. In the following twenty-four hours she voided 5 quarts of pale urine, most of which was passed within the first twelve hours. The second day the urine fell to 1 quart and became dark colored. Under this treatment in the spring of 1926 her weight fell from a maximum of 288 to 218 pounds (131 to 99 Kg.) with much improvement in her sense of well being. The injections of novasurol were given at intervals of from three to seven days and were speedily changed to the intravenous route, because of the pain and infiltrations produced by intramuscular injections. The following year, 1927, novasurol was changed to salyrgan, which was continued throughout the remainder of her life. The intravenous injection of 2 cc. of salyrgan produced an average diuresis of from 4 to 6 quarts. If the doses came too close together a smaller amount of urine was obtained, and experience showed that an interval of from five to seven days was necessary for a maximum effect. The largest twenty-four hour response obtained at any time was 9 quarts. These injections were continued fairly regularly over a period of five years. Early in 1929, the diuretic response seemed to be a little less satisfactory (under 3 quarts), and at the suggestion of Dr. S. A. Levine of Boston, who saw her with me, I increased the dosage to 4 cc. During the next twenty-four hours 7½ quarts of urine was passed. As time went on, intravenous injections became increasingly difficult. Sometimes the same vein could be used for repeated injections, but at other times after a single injection the vein would become converted into a firm, fibrous cord. Slight leakage of the drug would cause severe pain, and on a few occasions a superficial area of skin necrosis followed. Early in 1931 it became necessary to change to intramuscular gluteal injections of 3 or 4 cc. doses to which procaine hydrochloride was added. The diuretic response appeared to be equally good; very little pain was felt, and no unfavorable results followed. (However, in two other patients similar injections in the upper outer quadrant of the buttock produced an intractable sciatic neuritis and I should hesitate to use this particular location again.)

Many examinations of the urine were made during the six years of observation. The specific gravity varied within wide limits, and was usually above 1.020. Occasionally a small amount of albumin was present, and often hyaline or granular casts. No definite changes were noted in the urine as the years went on, and careful observations failed to show any effects whatever which could be attributed to the prolonged use of mercurial diuretics. This is all the more remarkable as novasurol (merbaphen), and salyrgan (mersalyl) are 10 per cent aqueous solutions of organic mercury compounds containing about 33 per cent of mercury. A maximum dose of 4 cc. would therefore contain 0.13 Gm. (2 grains) of metallic mercury in soluble form.

May 11, 1929, after three years of diuretic treatment, a phenolsulphonphthalein test was made. Forty per cent of the dye was returned in the first hour and 28 per cent in the second hour, a total of 68 per cent of the dye. May 29, at 11 a. m., the blood sugar was 133 mg. and the nonprotein nitrogen 40 mg. The Wassermann test of the blood was negative.

The morning of October 27, a 3.4 Gm. dose of novasurol instead of salyrgan was given intravenously. In the afternoon the patient felt ill and had two rather severe chills. She became restless and more cyanotic but passed 7½ quarts of urine in twenty-four hours. Diarrhea developed, and a small amount of blood was passed by rectum. The gums became swollen and red. The symptoms all cleared within a week. Novasurol is apparently more toxic than salyrgan, and although the patient had tolerated small doses well during the first year of treatment, this large dose produced symptoms of mercurial poisoning.

An interesting observation was the persistence of a satisfactory diuretic response during five years of treatment and up to within a few days of death. The total number of injections (mostly salyrgan) was 270. The only occasions on which diuresis did not follow were when the abdomen was greatly distended with ascitic fluid, which presumably caused pressure on important veins. As soon as the fluid was removed by paracentesis, the diuretic response was at once restored.

Read before the Syracuse Academy of Medicine, Oct. 19, 1931.

The weight fell to 177 pounds (80 Kg.) during 1929 from a previous maximum of 288 pounds. It then slowly increased to 300 pounds (136 Kg.) at the end. Restriction of diet appeared to have little effect in producing loss of weight. Thyroid gland in doses as large as 15 grains (0.9 Gm.) daily made no impression. A salt free diet seemed to be of some benefit, but the patient refused to follow it for long. Remarkable fluctuations in weight took place. She would gain 10 or 12 pounds in twenty-four hours and lose an equal amount in the same length of time after an injection of salyrgan. She persistently refused to go to a hospital, and all observations had to be made in her modest home. She weighed herself on bathroom scales and had the urine measured by an attendant.

The blood pressure slowly rose to a maximum of 225 systolic and 130 diastolic. Auricular fibrillation continued throughout and was verified by electrocardiograms, June 24, 1930, and Jan. 29, 1931. The liver could best be felt after paracentesis. It was greatly enlarged, reaching 6 inches below the costal margin in the nipple line. The surface was smooth and the edge sharp. The spleen could not be felt. Fluid was aspirated from the right side of the chest three times in 1926 and 1927 but did not have to be withdrawn thereafter. Guinea-pig inoculation with pleural fluid was negative for tuberculosis. Abdominal paracentesis was done twice in 1928 and eight times in the last fifteen months preceding death.

Because of the distress and dyspnea suffered by the patient, hypodermic injections of morphine were begun in 1928. She gradually developed a habit and required moderately large doses. This incident was regrettable, but it would have been cruel to withhold the drug.

During 1930 and the early part of 1931 her condition slowly deteriorated with a steady increase in the general anasarca and a rising weight curve. The abdomen became tremendously large; the legs were huge, and the skin broke down in several places with a leakage of fluid from the tissues. Cyanosis became intense; she drifted into a somnolent state and died, March 16, 1931. An autopsy could not be obtained.

COMMENT

An obese woman with decompensated hypertensive cardiovascular disease was given 270 injections of novasurol and salyrgan over a period of five years.

An excellent diuretic response was maintained throughout. The prolonged diuretic treatment appeared to be without harmful effects on the kidneys or other organs.

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SPASMOPHILIC TETANY IN THE NEW-BORN

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Tetany, or the spasmophilic diathesis, occurs chiefly in infants with some nutritional disturbance. Etiologically, it is looked on by some as a phase of status thymicolymphaticus. There is a definite constitutional predisposition to it. Some believe that it is a purely chemical deficiency due to a lack of guanidine and methylguanidine; others believe it to be a parathyroid dysfunction with a resulting calcium deficiency. According to Abt, the condition is seldom seen before the fourth month of infancy or after the third year. It is associated with a drop of blood calcium from 10 or 11 mg. per hundred cubic centimeters (normal) to 6 or 7 mg., with definite clinical symptoms, and complete recovery when the calcium content of the blood is restored to normal. It has been noted that few breast fed infants develop tetany and that most cases of this condition occur in bottle fed infants. Benjamin Kramer, in his discussion of Bass's[1] recent paper, said: "Although the clinical manifestations in all forms of tetany are identical, the chemical changes in the blood may be quite different. Although the serum calcium concentration is usually normal, there is justification for the assumption that the Ca^{++} ion concentration is reduced." As Bass and Karelitz have pointed out, although lowered calcium is an almost constant sign of tetany, equally low percentages may also be found in nephritis with no evidence of tetany. An absence of tetany has been reported with calcium of 5 mg. As Hess[2] states, the lack of complete harmony between the clinical manifestations and the calcium in the blood indicates that some factor other than the calcium concentration must be at work.

The case of tetany presented here I believe is one of the earliest reported. The condition probably existed before birth and was present at the time of birth. The patient developed typical spasmophilic convulsions thirty-six hours after birth. Unfortunately, calcium determinations of the blood were not possible; but the minutely typical clinical picture of emaciation, positive Chvostek's sign, Trousseau's sign, carpopedal spasm, convulsions starting with the eyes and extending to the extremities with clonic and tonic spasm, followed by laryngospasm and asphyxia, the prompt response to calcium therapy, and the subsequent normal development of the child justify the diagnosis. Whether this is a case of "infantile tetany" that so frequently in the literature is said not to occur in the new-born, or whether it is a case similar to the cases reported by Bass and Karelitz[1] is a purely academic question and cannot be proved because of the absence of blood calcium determination. The opinion exists that "infantile tetany" as an entity is a dietary deficiency disease. I find nowhere in the literature a suggestion that this condition must occur after birth. It could conceivably develop in utero, as it appears to have developed in this case.

REPORT OF CASE

The mother and father of the infant were both in good health. The mother, a primipara of a high strung, nervous disposition, took excellent care of herself throughout pregnancy in regard to diet, hygiene, and frequent and regular medical consultations. Pregnancy was normal. Labor was easy, normal, and of fourteen hours' duration. A full term, emaciated baby, weighing 6 pounds and 4 ounces (2,835 Gm.) was delivered. The cord was wrapped around the baby three times; the placenta showed large areas of degeneration. The baby breathed readily. He did not move readily; the arms were held in a spasm against the chest in the so-called obstetric position, the knees were flexed, and the feet were in equinovarus.

The baby was put in an improvised incubator and feedings were attempted every hour. He refused food and water. The condition remained about the same for thirty-six hours, after which convulsions started. These became steadily more frequent and severe. The body first stiffened slightly; then the eyeballs rolled back and twitched. The face became drawn spasmodically and the clonic state extended to the extremities. Breathing became labored. There were a few convulsive inspiratory efforts and then complete laryngospasm, with cyanosis, and finally a blue pallor. Recovery was quick; consciousness returned with normal respiration, but the infant seemed exhausted.

Trousseau's sign was present from the time of birth without pressure being applied. Chvostek's sign was easily elicited between convulsions. Also, Weiss's orbital spasm could be obtained.

The obstetrician thought that there was probably birth injury despite the easy, normal labor, and nothing but the mildest supportive treatment was advised. There was no family history of epilepsy. The recovery from each attack was more rapid than is usual in epilepsy and the attacks were more frequent. A careful examination revealed a full term, large boned, but terribly emaciated and feeble infant with every evidence of marked nutritional disturbance, showing every symptom and sign of tetany with the development of convulsions typical of the spasmophilic diathesis.

As the infant seemed about to die, I felt that the therapeutic test could not be delayed. The response was even more dramatic than hoped for. Six hours after treatment was started, laryngospasm had practically ceased and in fifteen hours the convulsions had entirely ceased.

The treatment consisted of calcium chloride, 7 grains (0.45 Gm.), every hour; viosterol, 3 drops every two hours; phenobarbital, one-twelfth grain (0.005 Gm.), every four hours. Forced feedings, 1 ounce of breast milk, every hour, were administered with a medicine dropper. It took forty-five minutes out of every hour to get the ounce down. In twenty-four hours the calcium chloride was stopped as it produced vomiting. The phenobarbital was stopped in forty-eight hours.

1. Bass, M. H., and Karelitz, Samuel: Tetany Accompanied by Hyperpyrexia and Vomiting in the First Days of Life, J. A. M. A. 97: 1372 (Nov. 7) 1931.

2. Hess, A. F.: Rickets, Osteomalacia and Tetany, Philadelphia, Lea & Febiger, 1929.

In ten days the baby became a simple feeding problem and has developed so far into a perfectly healthy normal 12 months old baby.

Abt states that "in convulsions of the new-born, the diagnosis of cerebral hemorrhage is more frequently made than is warranted. When autopsy is systematically done, we are very often surprised at the frequent absence of cerebral hemorrhage in cases diagnosed as such." I can recall a few fatal cases of convulsions of the new-born diagnosed as birth trauma that well might have been diagnosed as tetany and treated as such.

SUMMARY

Tetany should be considered in all cases of birth injury with convulsions. It is suggested that the condition is really not rare.

A therapeutic test is indicated in all questionable cases. Delay for positive diagnosis is desirable but dangerous.

The case reported here was cured with simple methods and drugs available to all practitioners.

A NEW METHOD FOR STRAIGHTENING THE PENIS IN HYPOSPADIAS

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The incurvation of the penis in hypospadias is caused by the shortening of the fibrous tissue which in this malformation replaces the corpus spongiosum. There is always in this location a firm fibrous band which, because it is nondistensible, causes the chordee.

A number of plastic operations—some of them more or less successful—have been devised for straightening the penis. But the weak point in all of them is the tendency to reformation of scar tissue at the seat of operation—in many cases this scar tissue causing a return of the chordee after the wound heals.

I believe that the method here explained offers the best solution of the problem. By this method the grafts, when healing occurs, take the place of the scar tissue that in a greater or less degree forms in all plastic operations.

More than a year ago I heard Colonel Kellar, at Walter Reed Hospital, read a paper on the use of tunnel grafts to overcome cicatricial contractures in other portions of the body. Noting his excellent results, I at once concluded that the use of this graft was the solution in overcoming the contracture and consequent incurvation in hypospadias.

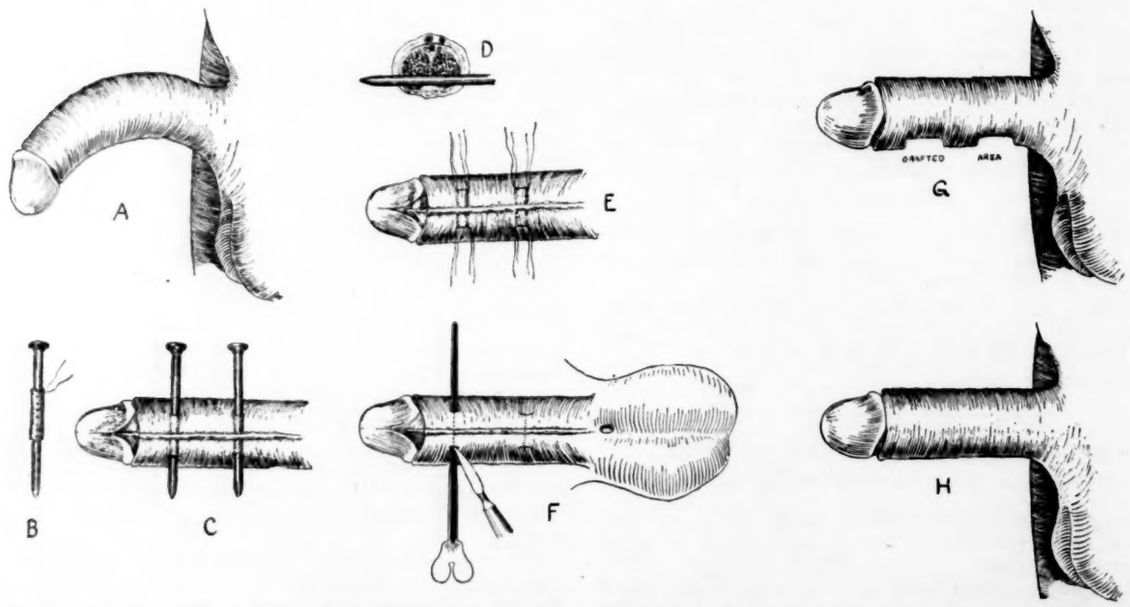
I have followed almost identically his technic. The operation is performed as follows:

A graft, including all the layers of the skin, is cut from the inner side of the thigh and placed in salt solution. A cannula is then thrust through the corpora cavernosa, care being taken to place it above the line of the fibrous tissue that causes the chordee. The cannula that I use is a 17 French, but the size can be varied to accord with that of the penis. After the cannula is inserted, a back-and-forward motion is made to enlarge the puncture wound. The cannula is then withdrawn; the skin graft, previously mentioned, is placed around it—the skin side next to the instrument—and two or three fine catgut sutures are used to bring the edges together. The cannula carrying the graft is then reintroduced through the puncture and the graft is slipped off, two fine catgut sutures being placed at the ends to hold it in position. Two of these grafts are usually sufficient—a succeeding one, if necessary, being placed in the same manner, and the punctures being made about 2 cm. apart. The urine is drained by a retention catheter in the opening of the perineal or the scrotal urethra, and a sterile dressing is then applied.

Rapid healing of the grafts takes place. At the end of two or three weeks a grooved director is passed through the graft and incised from within outward to the surface of the skin. Slight bleeding occurs, but it can readily be controlled by pressure. The graft tends to flatten out as soon as the incision is made, but after a month or six weeks the grafted area can be noticed only by the difference in the appearance of the skin, while palpation at the base of the graft shows no tendency to the formation of scar tissue.

In no mode of straightening the penis before performing a plastic operation to make the urethra have I observed such results as occur when the procedure here outlined is followed.

1835 Eye Street N.W.



Method of procedure: *A*, location of puncture through corpora cavernosa for the reception of grafts; punctures are placed above the fibrous tissue that causes the chordee. *B*, tunneled graft. *C*, puncture through corpora cavernosa for reception of grafts. *D*, transverse section, showing location of puncture for reception of tunneled graft. *E*, grafts in place, held by sutures. *F*, cutting through the healed tunneled graft. *G*, result following incision of tunneled graft. *H*, ultimate result, from three to four months after operation.

Read before the Southern Surgical Society.

Origin of Syphilis.—Somewhere and at some time a nonpathogenic spiral organism acquired pathogenic properties and became Spirochaeta pallida. It seems likely that this event took place in America, less than 10,000 years ago. . . . An antiquity for syphilis as slight as even 2,000 years would, I think, present no difficulties to a modern bacteriologist accustomed to the development of rough and smooth, nonvirulent and virulent colonies from one pure culture of bacteria, frequently under conditions that he can easily control.—Williams, H. U.: The Origin and Antiquity of Syphilis: The Evidence from Diseased Bones, *Arch. Path.* **13**:979 (June) 1932.

Special Articles

THE CHANGING DIET OF THE AMERICAN PEOPLE

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The study of anthropology leaves no doubt of the existence of epochs in the evolution of our diet. For the preparation of food, primitive races still use methods that must have been in vogue before the era of cookery. Sun drying, grinding, burying and maceration are ancient devices for rendering edible products more palatable and digestible. Some writers have depicted the happy dietary lot of early man living in a delightful climate in the midst of nature's utmost luxuriance. "The reality," Fitch [1] remarks, "was far from this Utopian conception, which was a product of a vivid imagination. The food which he was able to obtain easily was scarcely worth gathering, and in order to satisfy the pangs of hunger and to sustain existence, he was compelled to put himself to much trouble and to undergo many dangers. This is known from the fact that certain races, whose mode of life approximates most closely that of the primitive dwellers on earth, have the greatest difficulty in eking out a miserable existence."

The development of agriculture, including the cultivation of the soil and the domestication of animals, furnished many new possibilities for the production and selection of foods derived from animals as well as from plants. The progress of cibiculture and the introduction of cookery gradually brought about long ago what has been described as "the acme of dietary excellence." Such assertions therefore raise the question as to whether our present-day diets are really changing in any fundamental way.

Recently my attention was called to "A Treatise of Foods," [2] published at the beginning of the eighteenth century by Louis Lemery. In the preface to this interesting volume the French scientist remarks that "if foods contribute so necessarily, to the preservation of life and health; they also produce the greatest part of those distempers, to which we are subject, and many times, by the ill use of them, cause even death itself." He adds that "the ground-work of our preservation, consists chiefly in a knowledge of suiting foods to every constitution, as it best agrees with it." And he concludes with the admonition that "the knowledge we ought to be most desirous of, should be that of foods."

A mere glance at the chapter headings of Lemery's book reveals an unexpected variety of all sorts of foods, of both animal and vegetable origin, together with a formidable list of condiments and "drinkables." One's first impulse on examining the volume is to ask whether we really have changed our dietary habits, inasmuch as our predecessors of two centuries ago could present such a diversity of items familiar in today's menus. The most conspicuous omissions in the older lists involved the more refined or processed edible materials that have been developed through the efforts of the food industries in the last few decades. This is notably true, for example, of the numerous highly milled cereal products and other cereal novelties that have come to take a conspicuous place in the American meals of today. Bread—the "staff of life"—no longer retains its supreme dominance.

The diet of a group may change not merely through innovations in the foods used but also because of revisions in the choice of long familiar edible products. This may result in a shift in the proportions of the true nutrients—the proteins, fats and carbohydrates—as well as in altered preferences with respect to vitamin-bearing foods. Have there really been noteworthy changes in our national dietary? Are there "styles" in food? Perhaps the easiest way to begin the solution of these questions is to examine a few characteristic menus of the past.

Our forefathers were not unaccustomed to lavish meals. In "The Accomplisht Cook, or the Art and Mystery of Cookery," printed in 1678, there are bills of fare for every month of the year. Let me present some details of a menu for All-Saints Day in November. The first course alone includes twenty dishes, beginning with oysters, continuing through beef and capons and geese and ducks and mutton, venison and swans, veal and roast turkey, and ending with "a double-bordered custard." The second course includes twenty more dishes—oranges and lemons, and more meat dishes—pig and lamb and ducks, "a couple of pheasants," several varieties of fish, three brace of partridge, and then a dish of spinach. After the spinach, a roll of beef, a cold goose pie, and so on and so on until we finally reach the dessert—jellies and tarts and gingerbread, "and other fruits," according to the original bill of fare. Is it any wonder, a reviewer remarks, that the old cookbooks included a few chapters on medicines and salves, and "broths for the sick"?

In Mrs. Glass's Cook Book, published in 1805, one of the dinner menus to be served in three courses contained the following offerings:

First Course.—Vermicelli soup, leg of lamb, chicken and veal pie, tongue, petit patties, cod's head patties, boiled chickens, roasted beef, scotch-collops.

Second Course.—Marinated smelts, roast sweetbreads, almond tort, roasted turkey, stands of jellies, maids of honour, woodcocks, mince pies, larks, lobsters.

Third Course.—Artichoke bottoms, custards, scalloped oysters, morels, dutch beef scraped, cut-pastry, potted chars, rabbit-fricasseed, macaroni, black cup, stewed celery.

The bill of fare of the Irving House in San Francisco for a banquet on Dec. 6, 1851, lists eighty dishes. There were two choices of soup, two of fish, twelve "National Dishes" (meats), six boiled dishes (meats), four roasts, six *hors d'oeuvres*, twelve entrées (meats), ten vegetables, ten game dishes, eighteen pastries and entremets (pies, puddings, cakes), and ten fruits and nuts as desserts.

In a volume on "The Sabbath in Puritan New England," Alice Morse Earle has given a description of the supper served on the occasion of the ordination of a new pastor of the Old South Church in Boston in February, 1861: [3]

There were six tables that held one with another eighteen persons each, upon each table a good rich plumb pudding, a dish of boil'd pork and fowls, and a corned leg of pork with

Clinical lecture, read before the American Medical Association at the Eighty-Third Annual Session, New Orleans, May 10, 1932.

1. Fitch, W. E.: Dietotherapy, New York, D. Appleton and Company, 1918, p. 6.

2. Lemery, Louis: A Treatise of Foods (in French), English translation, London, John Taylor, 1704.

3. Earle, Alice Morse, quoted from Bogert, L. J.: Nutrition and Physical Fitness, Philadelphia, W. B. Saunders Company, 1931.

sauce proper for it, a leg of bacon, a piece of alamode beef, a leg of mutton with caper sauce, a roast line of veal, a roast turkey, a venison pastee, besides chess cakes and tarts, cheese and butter. They had plenty of old cyder, one barrel of Lisbon wine, punch in plenty before and after dinner, made of old Barbados spirit.

One of the early novels of Anthony Trollope, published in 1855,[4] describes the "breakfast-parlour" of a representative well-to-do clergyman. After discoursing about the breakfast service with its varied items of silver and china, the author referred to the viands as follows:

The tea consumed was the very best, the coffee the very blackest, the cream the very thickest; there was dry toast and buttered toast, muffins and crumpets; hot bread and cold bread, white bread and brown bread, homemade bread and bakers' bread, wheaten bread and oaten bread, and if there be other breads than these, they were there; there were eggs in napkins, and crispy bits of bacon under silver covers; and there were little fishes in a little box, and devilled kidneys frizzling on a hot-water dish; which, by-the-by, were placed closely contiguous to the plate of the worthy archdeacon himself. Over and above this, on a snow-white napkin, spread upon the sideboard, was a huge ham and a huge sirloin; the latter having laden the dinner table on the previous evening. Such was the ordinary fare at Plumstead Episcopi.

The conditions represented by this description were not fundamentally different on this side of the Atlantic. In Robert Playfair's Recollections of a Visit to the United States [5] in 1847, 1848 and 1849 he refers to the food that he encountered in the hotels, in these words:

Printed bills of fare were placed within reach of each guest, so that we might select what we pleased, nor did I observe any symptom of the rapid eating some tourists have described. As this dinner is a type of what is generally found throughout the Union at the best hotels, I here insert a Bill of Fare during my stay at the City Hotel, which may not be uninteresting to my English reader: the impression probably will be that these Republicans live well.

Then follows the table d'hote menu for Sunday, Aug. 8, 1847. The "first course" offered along with soup and fish (broiled fresh salmon, lobster sauce), boiled turkeys, oyster sauce, boiled rump corned beef and cabbage, boiled sugar cured ham, boiled lobster salad, boiled beef tongues, stewed kidneys with wine, macaroni with Parmesian cheese, sweetbreads with sorrel, broiled chickens with bread, stewed ducks with olives, stewed pigeons with mushrooms, fillets of fresh pork with tomato sauce. To these were added entrées as follows: poitrine de mouton, grillé, à la sauce tomate; fricandeau, à la sauce tomate; canard, braizé, aux navets; tête de veau, à la sauce tomate; huitres à la poulette; côtelettes de mouton, en papillote; pâtés de poulet; poitrine de veau, aux champignons; blanquette de veau, au currie; salmis de bigier; bifstek auz huitres; roast tame geese, apple sauce; roast young chickens; roast tame ducks; roast sirloin of beef; roast lamb, mint sauce; roast veal, roast pig, pickle sauce; squash, green corn, tomatoes, beans. A "second course" consisted of game; roast yellow-leg snipe. The "third course" included only three items of pastry; namely, ice cream and pies. The "fourth course" was devoted to dessert: almonds, watermelons, blackberries and raisins.

These are, of course, records of the best food afforded by institutions that catered to the well-to-do. In the letters of Thomas Mooney, published in 1850 under the title "Nine Years in America," it is related that "the food of the American farmer, mechanic, or labourer, is the best . . . enjoyed by any similar classes in the whole world. At every meal there is meat or fish or both. . . . The breakfast of the common people is made up of coffee or tea, fish, meat, butter, bread, potatoes, all on the table." Dinner included tea, meat, bread, hot cakes and the like.

One is impressed, in surveying such menus, by the great abundance of flesh foods in the dietary. This is true regardless of the time of day when the meals were served. The supply of muscle meats was evidently more readily maintained throughout most seasons of the year than was that of fresh fruits and vegetables. With the passing of the years there has been a gradual displacement of meats from their former dominance in the regimen. The modern statistics of the food industries indicate an increased consumption of dairy products, vegetables and sugar.

The story of sugar is particularly interesting.[6] During the early part of the last century, sugar was used primarily as a condiment. The consumption in 1823, for example, has been estimated as enough to give each person 8.8 pounds a year. This represents about 44 calories a day. Last year, somewhat more than a century later, the annual per capita consumption of sugar amounted to 108 pounds, or more than 500 calories a day. This means that sugar has become an important food, representing, on the average, nearly one sixth of our energy intake. Incidentally, this has been accomplished with a tremendous reduction in the cost of the product; 1,000 calories are being sold at a retail price of less than 3 cents.

Obviously, this change in food habits in the case of sugar has resulted in the displacement of other foods from the national diet. As I have stated elsewhere,[6]

The fact that one fifth of our diet, nowadays, consists of this vitamin-free food is especially important because the other four fifths have also lost much of their vitamin potencies in the refining processes to which so many modern foods are subjected. Cornstarch, for instance, is a purified food; the vitamins and salts of the maize kernels from which it is made have been taken out. Rice, in the process of polishing, has lost most of its vitamins, and the same is true of other highly milled cereals. And not only the carbohydrate foods but also the fats and even some of the proteins in our diet are being subjected to chemical "purification" before they reach our kitchens.

The tendency toward the displacement of meat dishes, with their higher protein content, is indicated in the recent experience of American restaurants that have adopted the new fixed-price plan with the slogan of "all-you-can-eat." This means that the patron may repeat orders for any dish on the menu without added expense. An observer [7] has remarked that thus for the first time there has been a large-scale popularity contest, with no price handicaps. She further comments: "The result of the wide-open menu has not been vast new inroads on the roast beef and the mutton chops and other stalwart he-man viands." She then adds: "What we lean, dieting, strenuous go-getters of Yankees really want—according to the past year's comprehensive experiment—is more dessert! Our erstwhile suppressed desires have apparently been for ice cream

4. Trollope, Anthony: The Warden, 1855.
5. Playfair, Robert: Recollections of a Visit to the United States and British Provinces of North America, in the Years 1847, 1848 and 1849, Edinburgh, 1856.
6. Mendel, L. B.: Our Changing Food Habits, in Your Weight and How to Control It, New York, George H. Doran Company, 1927.
7. Barnard, Eunice Fuller: New York Times Magazine, Feb. 28, 1932.

on our apple pie, more peach shortcake and another chocolate eclair."

There are more objective indications of changes in our food preferences in the direction of lessened protein intake, such as a decrease in meat consumption would bring about. In the course of a long experience as a teacher of metabolism I have gathered the reports of hundreds of analyses of twenty-four hour urines of young men and women. In health the nitrogen content of the kidney output furnishes a reliable index of the nitrogenous (or protein) intake. During the nineties of the last century the estimated protein intake, after due allowance for fecal losses of nitrogen, generally approximated an average of at least 100 Gm. (16 Gm. N × 6.25) a day. In the course of the years, these annually secured estimates are showing lower averages. Other teachers have had similar experiences. The newest figures of Hetler [8] on young women in Illinois studied during the years 1928-1930 averaged 7.7 Gm. of nitrogen (equivalent to about 50 Gm. of protein metabolized) daily. This corresponds to 9.5 Gm. of nitrogen (or about 60 Gm. of protein) for a man weighing 70 Kg.

How have these changes in our food habits come about? Are they merely the result of our instincts? Several years ago my colleague T. B. Osborne wrote:

> Under normal conditions of supply and normal conditions of health, little attention is given by the great mass of mankind to the question what or how much should be eaten. They simply eat what they want and as much as they want, and then stop and go about other business. They know nothing of the dietary elements which the nutrition expert tells them are so essential for their well being, and even for their very existence.
>
> How can they long survive in such ignorance? Why does the community allow them to endanger, not only their own lives, but those of posterity? The only possible answer is that they are endowed with instincts which guide them so well, that under normal conditions of life they escape the many dangers that until recently they were unconscious of.

Instinct, which was long lauded as the safe guide to ideal nutrition and which is still heralded even by physicians, has been shown to have its definite limitations in the choice of foods by man. A generation ago Ellen H. Richards, an American pioneer who exhibited zeal for the application of science to daily life, wrote:

> It is unsafe to trust the individual to the guidance of the appetite alone, for the reason that this instinct was built up for a condition of existence very different from that which enables the people of this country to indulge themselves today.

Realizing the effect that changes in the transportation and distribution of commodities were exerting on the availability of the food supply, she sensed "conformity to scientific laws as the only way to safety."

In an address before the Second Pan American Congress in Washington, in 1916, I [9] remarked that

> The supply of food energy and its availability where needed are interrelated closely with a variety of factors, the bearing of which upon the problem at hand is not always evident upon the surface. Some of these features may be classified superficially as follows:
>
> 1. Food production.
> 2. Food preservation and food conservation.
> 3. Transportation facilities.
> 4. Customs in diet.
> 5. Changing industrial and social conditions and other economic and hygienic factors.

It is possible today to secure fresh meats, fresh eggs and fresh milk in every urban center without interruption; citrus fruits and some sorts of fresh vegetables are available throughout the entire year, even in the smallest hamlet. The opportunity of selection has thus become greatly enhanced. To these important changing factors must be added the results of research in the physiology of nutrition and the extension of popular education regarding foods and diet.

As far as the medical profession is primarily concerned, our modern knowledge has served to establish firmly the calory idea in nutrition. The advantages of intelligent "calory feeding" in infancy and the so-called high calory diets in certain types of prolonged fever, notably as advised by Coleman in typhoid, have become permanent accessions to medical practice. Newburgh has lately demonstrated anew that the successful management of obesity is fundamentally a problem of energy bookkeeping, of balance between intake and output, regardless of the existence of long periods of stationary body weight due to retention of water.

The growing information about the formerly unsuspected dietary essentials called vitamins has begun to afford intelligent appreciation where obscurity formerly prevailed; it has also permitted new interpretations of long suspected nutrient virtues in foods. The red tomato served on a green lettuce leaf can no longer be dismissed as merely an esthetic combination of water, roughage and inorganic salts. The golden citrus fruits supply something more than the tart sweetness of their palatable juices. Milk and butter have become more than rich sources of energy. Cod liver oil or concentrates thereof are being widely used as prophylactics. Salad greens are eagerly ordered and eaten. Our population is becoming "vitamin-conscious."

The discovery, in 1895, of iodine in the body, its relation to thyroid function, and its variable sources in nature, ushered in a new era of interest in "the little things" in nutrition. A few milligrams—less than a single grain—of a long recognized element spell physiologic well being that turns to disorder in their absence. The rôle and importance of calcium and phosphorus and chlorine are being elucidated more clearly every year. Copper has become an additional hematopoietic possibility where iron once reigned alone. Manganese beckons with possibilities. The inorganic elements are no longer neglected in relation to nutritive welfare. "During the past ten years," Mary Swartz Rose [10] recently wrote, "we have gradually become accustomed to thinking quantitatively in nutrition, not only in terms of calories and grams of proteins, fats and carbohydrates, but in terms of fractions of milligrams of mineral elements and vitamins." The potential acidity and alkalinity of our foods are attracting attention—perhaps even more than they deserve. In any event the physician ventures nowadays to conjure with foods as he has always done with drugs.

With the advent of modern bacteriology came the brilliant demonstrations of the specific microbiotic origins of many long known maladies of previously obscure etiology. Soon it became a natural tendency to postulate bacterial causes for every puzzling disease.

8. Hetler, R. A.: Protein Intake and Basal Metabolism of College Women, J. Nutrition 5: 69 (Jan.) 1932.

9. Mendel, L. B.: Changes in the Food Supply and Their Relation to Nutrition, New Haven, Conn., Yale University Press, 1916.

10. Rose, Mary Swartz: The Nutritional Significance of Some Mineral Elements Occurring as Traces in the Animal Body, Yale J. Biol. Med. 4: 499 (March) 1932.

Scurvy and beriberi were considered from this standpoint by more than one investigator. Little progress was made in the control of these disorders. With the growth of the newer knowledge of nutrition, however, has come the almost complete disappearance of scurvy in this country. There was a time when it seemed like a plague. It infested armies; it decimated those who traveled the seas; it put an end to more than one expedition into remote regions. In the first edition of Osler's Modern Medicine, published in 1907, scurvy was still classed with the nondescript group of "constitutional" diseases, including diabetes and gout. One can understand better what the present-day dietary management of scurvy and the prophylaxis against a once common disorder of man means by reading the views of the best writers of only twenty-five years ago. Thus, Robert Hutchison [11] wrote in the volume referred to:

> Summing up all the evidence, it seems probable that whilst a deficiency of fresh vegetables, i. e., of organic salts of potash, plays a part in the production of the disease by reducing the alkalinity of the blood, yet this does not afford a complete explanation of the occurrence of all the symptoms, and it is not unlikely that upon the soil so prepared there is grafted some specific infection which finds access to the body by the mouth. Insanitary surroundings, overwork, mental depression, and exposure to cold and damp, facilitate the development of the disease by lowering the resistanee of the patient.

Today it can be said, in the words of A. F. Hess: [12]

> There is almost nothing in the realm of therapy which is so striking as a scorbutic patient's prompt reaction to antiscorbutic treatment. It is all the more marvelous as the cure is effected by means of foodstuffs with which we are accustomed to associate no specific virtue. A magic result is seen frequently within twenty-four or forty-eight hours. A baby which has had a poor appetite, has been irritable and exquisitely tender, suddenly regains its appetite, is no longer fretful, and can be handled without occasioning crying. Within a week, if the case is mild, all definite symptoms of scurvy may have disappeared, and soon thereafter the infant is thriving and apparently cured.

This is the story of the effectiveness of a food constituent, vitamin C, of which the production, in the laboratory of the organic chemist, seems imminent.

The etiology of rickets also is now better understood and its dietotherapy appreciated. The circumstance that rickets still remains so widely prevalent is perhaps a serious criticism of the medical profession and a challenge to its resourcefulness in the use of available curative and prophylactic agents.

Despite some doubts voiced now and then as to the precise etiologic background of both beriberi and pellagra in man, there are growing evidences that they belong primarily among the avitaminoses and can be averted by proper diet. Some of the practical difficulties may be attributable to the possibility that the clinical manifestations represent syndromes in which more than one dietary deficiency is involved. McLester [13] has recently asserted that the interest which vitamins hold for the physician is not alone in their relation to certain well defined diseases such as scurvy, beriberi and rickets, but rather in the fact that chronic vitamin deficiency produces numerous vague, borderline states of ill health which often puzzle the physician and disable the patient. These last are of far greater importance to the physician of today than the more clearly defined deficiency diseases.

The possibilities of accelerating or retarding growth through dietary measures alone have been indicated again and again in recent years in the experimental laboratories. Some of the discoveries have begun to be applied in human dietetics. The greater use of so-called protective foods, including fruits and vegetables, has become widespread. The insistent propaganda for the more liberal inclusion of milk in the regimen of the old as well as the young is finding acceptance. It is too early to determine the possible effects of some of the changing food habits through which in turn meats and then the cereals have lost some of their former dominant popularity. There are signs that many of our adolescents are growing somewhat more rapidly than in former generations. Is this an outcome of our modern education and advertising? Is it a wholesome trend? It is too early to answer these questions with conviction; but our menus have indeed changed.

There is no field of practical importance related to human well being in which there is greater opportunity for dogmatism and quackery, for pseudoscience and unwarranted prescriptions and proscriptions, than in the domain of our daily diet. Those who have seen the pendulum of enthusiasm swing from one extreme food fad to another in the course of the years will be wary. Let them keep an open mind, without becoming too reactionary to notice that our food habits do change.

11. Hutchison, Robert: Scurvy (Scorbutus), in Osler's Modern Medicine **1**: 893, 1907.
12. Hess, A. F.: Scurvy: Past and Present, Philadelphia, J. B. Lippincott Company, 1920.
13. McLester, J. S.: Nutrition and Diet in Health and Disease, ed 2, Philadelphia, W. B. Saunders Company, 1931.

CLINICAL ASPECTS OF VITAMIN G DEFICIENCY

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[EDITORIAL NOTE.—The following article is one of a series on the Present Status of the Knowledge of Vitamins, prepared under the auspices of a committee composed of Morris Fishbein, chairman, Lafayette B. Mendel and Julius Hess, representing a joint committee of the Council on Pharmacy and Chemistry and the Committee on Foods. These articles have been considered by the Council on Pharmacy and Chemistry and by the Committee on Foods and are published under their auspices. The opinions expressed are those of the authors and not necessarily the opinions of the Council on Pharmacy and Chemistry or the Committee on Foods.]

It is the prevalent opinion that vitamin G deficiency is intimately associated with the complex syndrome of symptoms included under the term pellagra. The complexity of the disease is so evident that some reluctance is justified in accepting the view that a single food deficiency may be responsible for such a varied series of clinical manifestations. In fact, some writers have suggested that what is called pellagra may be a mixture of diseases rather than an entity,[1] for in a given patient pellagra may involve predominantly only one system, whether this is the skin, alimentary tract or nervous system, and little damage may be done to the other systems; [2] on the other hand, all three systems may be affected. Again, the symptoms observed may be so atypical of the classic features of pellagra that they have received the name pellagra sine pellagra. At the present stage of knowledge one may accept the view that, although vitamin G deficiency is closely

From the Department of Pharmacology and Toxicology, Yale University School of Medicine.

1. Turner, R. H.: J. Clin. Investigation **10**: 61 (April) 1931.
2. Turner, R. H.: J. Clin. Investigation **10**: 81 (April) 1931.

related to pellagra, some caution must be exercised in relying on this vitamin deficiency as being entirely responsible for the etiology of the disease. This caution is especially pertinent when preventive or curative measures are to be advocated. The discovery of the potency of the unknown factor termed vitamin G is an undoubted advance in the knowledge of pellagra, but it is clearly unwise to assume that vitamin G deficiency and pellagra are necessarily synonymous terms. In view of the experimental data available, there appears the possibility that there may be several deficiencies involved in the disease condition under discussion.

It is significant that the earliest records of pellagra are associated with a food factor. It was in 1600 that Barnino described the occurrence among certain Indian tribes in America of a disease answering to the description of pellagra, which he related to maize. Since the time of Barnino the consumption of maize and the incidence of pellagra have been closely associated. As expressed by a writer in 1917, "to weave a chronicle of pellagra without encountering the visage of maize seems almost impossible. Through the tangled skein, as it is interwoven with the destinies of several nations and peoples, we see the rise and decline of this malady almost coincident with the consumption of Indian corn, and try as we may we cannot dissociate the two." [3] The view that corn bears a specific relationship to the etiology of pellagra has been hard to eradicate, but gradually opinion has changed so that other food factors are included. In the words of Goldberger,[4] "the consumption of corn or corn products is not essential to the production of pellagra, but this does not mean that corn, the best of corn, or corn products, however nutritious or however high in caloric value they may be, are not objectionable when forming of themselves, or in combination with other cereals and with vegetables, a large part of the diet of the individual."

In latter days the conception of the factor involved in the production of pellagra has undergone a radical change. When maize was specifically related to the disease it was assumed that this cereal played its rôle by imparting a noxious agent to the dietary, a toxic substance, produced possibly by a chemical change in the process of "spoiling." As early as 1776, Venice passed legislative measures to prohibit the sale or exchange of ill smelling, ill tasting, or discolored corn. Opposed to the older view that corn causes an intoxication stands the present-day hypothesis that corn and certain other foodstuffs lack something essential to proper nutritional rhythm; in other words, they are deficient.

It must not be accepted that food factors only have been assumed to bear a causal relationship to pellagra. Such is far from the fact. From time to time points of view have been presented which included infection carried by winged insects of blood sucking habits; infection of unknown origin, and infection carried by water containing silica or aluminum. The hypothesis of infection with a living micro-organism of unknown nature has many arguments to recommend it. MacNeal,[5] who is opposed to the food deficiency theory, believes that

> the etiology of pellagra depends on two factors analogous to those recognized by Roussel: (1) the specific causative factor which is a living organism, an infectious agent derived directly or indirectly from a previous case of the disease, and (2) a factor or group of factors, quite nonspecific, which serve to reduce the resistance of the victim. In this latter group are recognized malnutrition, either from inadequate food or inability to utilize food in an adequate manner, cachexia of disease, overwork, depressing influence of hot weather, strain of reproduction in women, involution of old age, alcoholism, and many other influences. The specific causative, which I believe to be a living organism, remains unrecognized. Most probably it remains in the gastro-intestinal tract, and the absorption of its products from the digestive tract gives rise to the distant manifestations of pellagra. In regard to the factors influencing the possible transmission of the hypothetical parasite, as well as those which may influence the resistance of the human individual, a great many facts have become established by epidemiologic studies in pellagrous districts.

Plausible and convincing as the infectious theory may appear, current opinion inclines to the view that if infection plays a rôle in pellagra it is of secondary importance and not causative. Much more significant are the factors that MacNeal terms nonspecific.

The incidence of pellagra is widespread. Every nation of Europe, including England, has had its experience with pellagra. In general, however, the disease has made less headway in the countries of the temperate zones than in those of warmer climates. It was not until 1863 that the disease was first clearly described in the United States. The high mortality in certain of the Southern prison camps during the Civil War has been ascribed to this disease. Since this period, pellagra has gained great headway in this country, especially in the Southern states, until today it is quite as prevalent as in Europe, if not more so. It seems quite inexplicable that in the United States, where so much has been contributed to the knowledge of nutrition, especially to the knowledge of vitamins, and where principles of nutrition have been so popularized that nearly every one has a speaking acquaintance with foods and food values, a disease presumably essentially related to food maladjustment should become so prevalent and should be decidedly on the increase. The situation is becoming relatively acute.

That diet plays the predominant rôle in the production or prevention of pellagra was first clearly established through the investigations of Goldberger and his associates. It was demonstrated by Goldberger, Waring and Willets [6] in 1915 that clinical recovery is obtained by proper feeding and is maintained as long as proper diet is continued. The dreaded recurrence of the disease does not take place in individuals receiving adequate nourishment. According to these authors there is no good evidence that the disease can be prevented by any other means. Having established that the disease may be prevented by proper diet, Goldberger and his associates [7] next attempted to induce the disease by selection of what they considered a diet resembling that found associated with a high incidence of pellagra in earlier studies. In this investigation six of eleven subjects developed the disease, whereas none of the control subjects evinced any symptoms.

The food factor responsible for the production of pellagra was at first associated by Goldberger and Tanner [8] with the amino-acid content of the proteins included in the diet. It was concluded that the essential etiologic dietary factor is a specific defect in the

3. Niles, G. M.: Reference Handbook of the Medical Sciences **7**: 71, 1917.
4. Goldberger, Joseph, quoted by Niles (footnote 3).
5. MacNeal, W. J.: Am. J. M. Sc. **161**: 469 (April) 1921.
6. Goldberger, Waring and Willets: Pub. Health Rep. **30**: 3117, 1915.
7. Goldberger, Joseph; and Wheeler, G. A.: Bull. 120, Hyg. Lab., U. S. P. H. S., 1920.
8. Goldberger, Joseph; and Tanner, W. F.: Pub. Health Rep. **37**: 462 (March 3) 1922.

amino-acid supply, probably in the nature of a deficiency of a special combination or combinations of amino-acids. On this hypothesis, an investigation of the therapeutic and preventive value of casein was undertaken. In 1925, Goldberger and Tanner [9] reported that while the casein had had a beneficial effect on the general nutrition of their patients and in considerable measure prevented or, at least, notably delayed the development of the distinctive eruption, it did not prevent, though it may have delayed, the relapse or recurrence of some of the other symptoms of the disease. They concluded, therefore, that the protein factor, if it is concerned in pellagra, is not the sole preventive or causative factor and thus that some heretofore unrecognized or unappreciated dietary complex also plays an essential rôle.

In an endeavor to discover the identity of this unknown essential complex they found that dried yeast is very effective in preventing the disease and that lean beef [10] also contains the effective agent, which was designated P-P (pellagra preventive). Further investigation revealed the fact that the P-P factor is associated with that earlier known vitamin "water soluble B," which had been assumed to possess only antineuritic properties. By means of heat, the antineuritic properties of yeast are destroyed, leaving a fraction which is pellagra preventive and apparently identical with Goldberger's P-P factor. The heat resistant pellagra preventing factor has been termed vitamin G.

The foregoing recital would lead one to infer that the conclusions of Goldberger and his associates were derived entirely from experiments on the human pellagrous subject. Such a view would be erroneous, for a perusal of the literature soon convinces one that the main inferences derived were first obtained through experiments on the dog. The dog, as a possible experimental animal for the study of pellagra, first came into prominence through a report which Chittenden and I [11] made concerning the production of a pathologic condition that bore certain resemblances to human pellagra. We ascribed the development of the disease to a deficiency of some essential constituent or constituents, presumably belonging to the group of hitherto unrecognized but essential components of an adequate diet. Five years later Wheeler, Goldberger and Blacklock [12] identified this experimental condition with the spontaneously occurring disease of dogs known as black tongue. Attention was also called to the strikingly similar geographic distribution of the two conditions in the United States, pointing out that black tongue, like pellagra, seems to occur for the most part in the Southern states. Goldberger and Wheeler [13] were able to reproduce in dogs an experimental condition similar, at least, to that which Chittenden and I produced, which Goldberger and Wheeler regarded as experimental pellagra. The symptoms were induced in dogs by a type of diet found to be associated with the occurrence of pellagra and also with a diet that had produced pellagra in the human subject.

Mendel and I [14] continued the investigation which Chittenden and I began and recently published an elaborate report. It is shown here that when butter fat is fed to dogs suffering from the deficiency disease which Chittenden and I described, those animals are quickly restored to a normal condition and may be maintained in health for long periods. Under similar circumstances cod liver oil, known to contain active fat-soluble vitamin A, fails to restore these diseased dogs. Evidently this vitamin is not the potent factor in butter fat. The effective factor in butter fat is apparently quite labile, for the potency is diminished by maintenance in cold storage during a period of from nine to eleven months. The presence of the potent factor in butter fat is associated with the color of the butter. As the color decreases, the potency is diminished. Egg yolk contains the effective factor but is apparently less potent than butter fat. It would appear that there is a direct relationship between the presence of carotenoids in the substances listed and the potent factor. This is supported by the fact that crystallized carotene in relatively small doses is capable of curing the disease condition. These authors also call attention to the possibility that naturally occurring pigmentary substances in foodstuffs may play a rôle in nutritive processes.[15] In connection with the last statement it may be recalled that this was written before it had been shown that carotene is closely allied to, or a possible precursor of, vitamin A.[16]

On the other hand, Goldberger and his associates [10] find that butter and cod liver oil exhibit little potency against black tongue or human pellagra. In black tongue as well as in human pellagra, yeast, yeast extract and fresh lean beef possess preventive powers. They have also extended their studies to include the rat as an animal capable of serving as an experimental subject for the production of pellagra.[17] Attention is also called to a study of the black tongue preventive action of sixteen foodstuffs including maize, whole wheat, wheat germ, cowpea, soy bean, milk, butter, cod liver oil, cottonseed oil, beef muscle, pork liver, canned salmon, egg yolk, canned tomatoes, carrots and rutabaga turnips. Of these substances, liver, salmon and egg yolk are rich in black tongue preventive and are recommended for use in the treatment and prevention of pellagra in man. The other substances may contain small amounts of the effective agent but in general are poor sources, with the exception of wheat germ and beef muscle.

At present there exists a wide discrepancy between the results which Mendel and I reported and those of Goldberger. The former found that butter, carrots and pig's liver were effective agents in the prevention of our experimental condition and that the pathologic symptoms developed in the presence of an apparently adequate supply of compressed yeast. On the other hand, Goldberger and his associates assert that butter and carrots are ineffective but that yeast, pig's liver and lean beef possess preventive powers against black tongue and human pellagra. The suggestion has been made by Goldberger [17] that the two experimental states under discussion may not be identical as had previously been assumed. The variations in experience with the experimental condition are perhaps only an expression of the complexity of the syndrome elicited

9. Goldberger, Joseph; and Tanner, W. F.: Pub. Health Rep. **40**: 54 (Jan. 9) 1925.
10. Goldberger, Joseph; Wheeler, G. A.; Lillie, R. D., and Rogers, L. M.: Pub. Health Rep. **41**: 297 (Feb. 19) 1926.
11. Chittenden, R. H., and Underhill, F. P.: Am. J. Physiol. **44**: 13 (Aug.) 1917.
12. Wheeler, G. A.; Goldberger, Joseph; and Blacklock, M. R.: Pub. Health Rep. **37**: 1063, 1922.
13. Goldberger, Joseph; and Wheeler, G. A.: Pub. Health Rep. **43**: 172 (Jan. 27) 1928.
14. Underhill, F. P., and Mendel, L. B.: Am. J. Physiol. **83**: 589 (Jan.) 1928.
15. Underhill, F. P.: Yale J. Biol. & Med., 1928.
16. Collison, Dorothy L.; Hume, Eleanor M.; Smedly-Maclean, Ida; and Smith, Hannah H.: The Nature of the Vitamin A Constituent of Green Leaves, Biochem. J. **23**: 634, 1929. Moore, T.: Vitamin A and Carotene: Association of Vitamin A Activity with Carotene in Carrot Root, ibid. **23**: 803, 1929.
17. Goldberger, Joseph; Wheeler, G. A.; Lillie, R. D., and Rogers, L. M.: Pub. Health Rep. **41**: 1385 (Feb. 19) 1926.

and may be indicative of a multiple deficiency eliciting manifold symptoms which, although superficially alike in etiology, may be quite distinct and separate. Until further much more critical experimentation is completed, decision must be reserved relative to the identity of the two experimental pathologic states and their relationship to human pellagra. Aykroyd [18] has suggested that the Underhill and Mendel syndrome has its origin in vitamin A deficiency. This comment is hardly pertinent since the pathologic state may be induced when active cod liver oil is present in the diet, a fact which Aykroyd apparently overlooked.

An examination of Goldberger's experimental results leads to the conception that in his human subjects the outstanding symptoms were sore mouth and a dermatitis involving a restricted area, the scrotum; with the dog suffering from black tongue, the prominent features were sore mouth and dermatitis of the scrotum; and with the rat a symmetrical dermatitis and loss of hair, gastro-intestinal symptoms being less pronounced. In none of the different types of experimental subjects was there significant evidence of the involvement of the central nervous system—evidences of cord degeneration, for example. The importance of cord degeneration in the syndrome has perhaps been underemphasized. It certainly has been recognized as contributing to the many sided syndrome of pellagra, but its significance has not been fully appreciated. Vedder [19] has suggested that the skin lesions which are so characteristic of pellagra may be referable to changes in the cord. He asks, "Otherwise, how can we explain the marvelous symmetry that is practically the constant characteristic of this symptom?" Mellanby inclines to the view that pellagra may be the outcome of a double deficiency, the absence of vitamin G being responsible for the skin changes and a deficiency of vitamin A or carotene allowing nerve degeneration to develop. In the experimental animals of Mellanby, degeneration of the cord occurred in the presence of yeast and other sources of vitamin G. He was unable to induce degenerative changes in the cord by feeding yellow maize and indicates that this failure may be due to the fact that yellow maize contains carotene.

In pernicious anemia, cord degeneration also occurs. The blood changes in this condition are not cured by the fat soluble portion of the liver.[20] On the other hand, Ungley and Suzman [21] assert that the nerve symptoms of pernicious anemia can be greatly improved by feeding whole liver. The possible interrelationship in the etiology of pernicious anemia and pellagra thus becomes manifest. To befog the clarity of this issue comes the recent pronouncement of Goldberger and Sebrell [22] to the effect that Minot's liver extract has a very definite delaying effect on the occurrence of symptoms in dogs on a black-tongue producing diet and that, when fed to dogs in an attack of black tongue, it has a very definite curative influence. "In view of the evidence herein presented, it seems that Minot's liver extract is a fairly good source of the antipellagric vitamin, and given in larger quantity would be of value as a temporary expedient in the treatment of pellagra." It must be pointed out, however, that in all probability the agent in liver extract responsible for the curative action of the blood picture of pernicious anemia is not identical with vitamin G, for it has been indicated that the antipellagric vitamin is not responsible for the effectiveness of liver in pernicious anemia.[23]

It would appear from this review that the allocation of vitamin G as the sole factor in pellagra is not well established and that too much reliance should not be placed on this agent in the prophylaxis and treatment of pellagra. A period of more than five years has now elapsed since the promulgation of Goldberger as to the effectiveness of the antipellagric vitamin. From a large experience with the disease, Turner [24] has recently reviewed the situation in the following words:

> The spectacular success of certain specific remedies for parasitic diseases such as malaria inspired physicians to hope that specific remedies would follow naturally in the wake of discovery of specific etiology. Pessimism has long ago succeeded such rosy optimism. However, in the field of the deficiency diseases the old optimism largely holds. There is an assumption in the minds of many that the administration of adequate specific vitamin must be followed by prompt clinical cure of the particular deficiency disease. Certainly the results of therapy in scurvy and rickets give some justification for this faith. However, there is a growing realization that disease in humans is rarely due to one factor, as it often appears to be in experimental animals. Castle and his associates have brought forth most convincing evidence of the importance of factors peculiar to the patients' own physiology on the pathogenesis of pernicious anemia, which might with reason be called a deficiency disease.
>
> It is now five years since Goldberger and his colleagues announced their studies on the value of factor P-P (now called vitamin G or B_2) in preventing the relapse of cutaneous pellagra in a group of patients in the Milledgeville Hospital. These results have been accepted widely as establishing the identity of pellagra with certain syndromes produced in experimental animals, and as final proof that factor P-P is the cause of pellagra. During these years those of us who see pellagra frequently have seen a large percentage of patients either die or go into chronic illness [25] in spite of what appeared to be ample opportunity for vitamin therapy to have been effective. The rather poor showing of vitamin therapy in pellagra may be used either as argument against the specificity of vitamin G or it may be interpreted as indicating that changes have taken place due to pellagra or some other disease or constitutional state which makes the vitamin ineffective.

In all fairness to the concept of Goldberger as to the effectiveness of vitamin G in experimental black tongue or pellagra, it should be pointed out that the real significance of vitamin G is more likely to be accurately evaluated under his controlled conditions than is possible in clinical practice, in which all types and particularly all stages of the disease are encountered. It is hardly possible to expect that, when structural damage has proceeded to certain limits, vitamin G, or for that matter any therapeutic measure, is likely to restore structures injured and, consequently, the patient to normal physiologic rhythm. From my own experience on dogs with the so-called pellagrous condition resulting from a deficient diet, the fact has stood out clearly that it is much easier to prevent the appearance of symptoms than to cause them

18. Aykroyd, W. R.: Brit. M. J. **1**: 647 (April 5) 1930.
19. Vedder, E. B.: Dietary Deficiency as the Etiological Factor in Pellagra, Arch. Int. Med. **18**: 137 (Aug.) 1916.
20. Mellanby, Edward: Diseases Produced and Prevented by Certain Food Constituents, J. A. M. A. **96**: 325 (Jan. 31) 1931; Brit. M. J. **1**: 677 (April 12) 1930.
21. Ungley, C. C., and Suzman, M. M.: Brain **52**: 271 (Sept.) 1929.
22. Goldberger, Joseph; and Sebrell, W. H.: Pub. Health Rep. **45**: 3064 (Dec. 12) 1930.
23. Cohn, E. J.; Minot, G. R.; Alles, G. A., and Salter, W. T.: J. Biol. Chem. **77**: 325 (May) 1928.
24. Turner, R. H.: A Physiologic Basis for the Treatment of Pellagra, read before the Section on Pharmacology and Therapeutics, at the Annual Session of the American Medical Association, Philadelphia, June 11, 1931.
25. More than 30 per cent of certain large groups of hospital patients die. Chronic ill health following an attack is almost the rule.

to disappear. On the other hand, at certain early stages of the disease the symptoms may be made to disappear by proper change in diet, and, so far as one may judge, the animal is restored to normality, which is maintained indefinitely so long as the nutrition is adequate. If, however, the disease is allowed to progress to stages beyond those mentioned, all efforts to restore the animal to health are useless and it invariably goes on to death.

From the theoretical point of view it would seem that vitamin G, so far as it plays a rôle in the syndrome of pellagra, may be of far more value as a prophylactic measure than as a curative agent.

Turner is quite aware of the influence of possible structural change on curative possibilities, as attested by his statement which follows:

> That extensive alimentary tract damage may occur in pellagra is well known, its extent and severity are extremely variable and have been inadequately studied by clinician and pathologist. It seems, then, probable that many of the therapeutic difficulties encountered in pellagra may be due to the existence of a vicious circle; malnutrition promoting alimentary tract damage and alimentary tract damage in turn interfering with nutrition. This concept would put chief emphasis for prognosis and therapy on the state of the alimentary tract. The evidence that alimentary tract damage predisposes to pellagra has been recently reviewed by Eusterman and O'Leary.[26]

The last mentioned authors consider that pellagra may be secondary to obstructing benign lesions or dysfunction of the upper part of the digestive tract. In these cases of interference with proper alimentation it is possible that parenteral administration of vitamins may be advisable when suitable preparations become available.

Bender[27] and Nuzum[28] have reported secondary pellagra under somewhat similar conditions, the only apparent cause being the interference in alimentation.

Just as pellagra may be induced by diminished food intake because of disease, so may it appear by voluntary restriction of diet. Pellagra is usually associated with the poorer classes of society in which, for economic reasons, adequate food supply is difficult to obtain. There is, however, abundant evidence that the symptoms of the disease may be manifested among individuals whose economic status includes them in the class of the wealthy. Roberts[29] has presented detailed records of twenty-five patients developing pellagra whose tables contained an abundance of well balanced food. Roberts shows that not one of these patients ate a well rounded diet of meat, milk, eggs or wholesome vegetables. He notes that the leanness of most of the patients was striking and remarks that fat people rarely become pellagrous. In this series of cases Roberts shows that his patients had the best food and that they fell into two groups: (*a*) One class ate an unbalanced diet; (*b*) the other ate not only an unbalanced but a "skimpy" starvation diet. These patients were undernourished. As soon as they were placed on a diet which they had formerly refused for psychic or imaginary reasons, they ate it continuously, improved and led active lives. "There is apparently among the better classes a small proportion who have a natural or acquired antipathy to a well rounded, balanced diet. Is there a dietary hysteria? Some persons pride themselves on never getting hungry. Grief, monotony, disease, domestic worries, the preparation of food, constipation are agents in depriving women more than men of their appetites. In this series there were only four men and twenty-one women." Tanner and Echols[30] have also called attention to similar cases.[28] Carley[31] reports a case of pellagra in a woman who, because of fear of cancer, voluntarily eliminated various articles of food until little else than cereals was being ingested.

That alcoholism may contribute its share in the onset of pellagra has been demonstrated by Klauder and Winkleman.[32] In these patients the history uniformly concerned alcoholism of years' duration, with symptoms of pellagra appearing after a debauch lasting for weeks, and often months, during which time incredible amounts of alcohol were consumed daily and little or no food eaten, or, at most, only one type of food.

Dietary restriction instituted to combat some other disease may in itself give rise to symptoms characteristic of pellagra. This is well illustrated in the treatment of epilepsy by the administration of a ketogenic diet. Guthrie[33] and Greer[34] have described cases of such nature, the symptoms disappearing on resumption of a more complete diet.

Finally, in this period of financial depression with the establishment of "bread lines" in many of the larger cities, pellagra may be expected to be encountered with increasing frequency unless measures are taken to provide against possible vitamin deficiencies in the food that is passed out.

That such a situation is already existent is attested by Dr. DuBois[35] in the following words:

> Three or four years ago in Bellevue we began to notice in the medical wards a few patients with symptoms of mild pellagra. These consisted in a beefy red tongue, persistent diarrhea and a roughness of the backs of the hands with a dark discoloration. This was not very marked and some of the dermatologists when they saw the skin lesions called them pseudopellagra, whatever that might be. Three years ago the only patients who presented this symptom complex were the lowest type of alcoholics who go for months living on bad whisky, coffee and doughnuts. At that time Dr. Feigin, who had charge of the alcoholic ward at Bellevue, told me that he was seeing many cases of mild pellagra.
>
> Last year we continued to find in our wards about the same number of alcoholics with mild pellagra but in addition we encountered a half a dozen or so cases which occurred in men who were not alcoholic, as far as we could judge from their histories and physical examination. Practically all, probably all of these mild pellagrins gave the story of many months without work, bread lines, cheap lodging houses. As far as I could tell, the food given out in the bread lines was deficient in calories and vitamins and second helpings were obtainable only if one waited a second period of three or four hours in the line.

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26. Eusterman, G. B., and O'Leary, P. A.: Pellagra Secondary to Benign and Carcinomatous Lesions and Dysfunction of the Gastro-Intestinal Tract, Arch. Int. Med. **47**: 633 (April) 1931.
27. Bender, W. L.: Pellagra Secondary to Lesions of the Stomach Interfering with Nutrition, J. A. M. A. **84**: 1250 (April 25) 1925.
28. Nuzum, F. R.: Pellagra Associated with Annular Carcinoma of the Terminal Portion of the Ileum, J. A. M. A. **85**: 1861 (Dec. 12) 1925.
29. Roberts, S. R.: Types and Treatment of Pellagra, J. A. M. A. **75**: 21 (July 3) 1920.
30. Tanner, W. F., and Echols, G. L.: The Occurrence of Pellagra in Patients Apparently Receiving an Ample Diet, J. A. M. A. **76**: 1537 (May 14) 1921.
31. Carley, P. S.: A Case of Pellagra Following Voluntary Reduction of Diet, J. A. M. A. **91**: 879 (Sept. 22) 1928.
32. Klauder, J. V., and Winkleman, N. W.: Pellagra Among Chronic Alcoholic Addicts, J. A. M. A. **90**: 364 (Feb. 4) 1928.
33. Guthrie, R. H.: Pellagra-Like Skin Lesions Appearing in the Course of a Ketogenic Diet, J. A. M. A. **95**: 1912 (Dec. 20) 1930.
34. Greer, A. E.: Pellagra-Like Skin Lesions Due to the Ketogenic Diet, J. A. M. A. **95**: 863 (Sept. 20) 1930.
35. DuBois: Personal communication to the author.

Council on Physical Therapy

THE COUNCIL ON PHYSICAL THERAPY OF THE AMERICAN MEDICAL ASSOCIATION HAS AUTHORIZED PUBLICATION OF THE FOLLOWING ARTICLE.
H. A. CARTER, Secretary.

ULTRAVIOLET RADIATION USEFUL FOR THERAPEUTIC PURPOSES

SPECIFICATION OF MINIMUM INTENSITY OR RADIANT FLUX: SECOND COMMUNICATION

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Recently I [1] published the results of a survey of the question of the minimum intensity of ultraviolet radiation acceptable for therapeutic purposes.

Based on six major lines of evidence, I arrived at the conclusion that, in order to insure effective therapeutic results, the intensity (radiant flux density) from sources of heterogeneous ultraviolet radiation, of wavelengths less than and including 313 millimicrons, evaluated according to the spectral erythemic response curve, should not be less than the erythemogenic equivalent of 20 microwatts (200 ergs per second) per square centimeter of homogeneous radiation of the wavelength, of maximum erythemogenic effectiveness, which wavelength, for practical purposes, is taken at the emission line of mercury vapor, at 297 millimicrons (more exactly, 2,967 angstroms).

Using homogeneous radiation of wavelength 297 millimicrons, it may perhaps be possible to cure rickets by exposure to intensities that are lower than 20 microwatts per square centimeter, provided the treatment is sufficiently prolonged. However, such a source is not in common use and, hence, need not be considered.

Although there appears to be no close relationship between the spectral erythemic response and the spectral activation curve of ergosterol in the production of Vitamin D and in the healing of rickets, the erythemal reaction is taken as a criterion for judging the effectiveness of the lamp, for three reasons: (*a*) It is practically the only physiologic reaction that is established with a relatively high degree of accuracy; [2] (*b*) in the case of exposure to intense sources of ultraviolet radiation, it is a simple and practical means of preventing severe burns, and (*c*) in the case of weak sources of ultraviolet radiation, it is an efficient safeguard against possible fraudulent sale of lamps that are deficient in ultraviolet radiation.

Furthermore, the preliminary erythema test will no doubt always be made on new subjects, even after the lamp has been standardized by some form of dosage intensity meter. Hence, it seems natural to use the erythemal instead of the antirachitic or a photochemical action (the production of vitamin D) as a basis of standardization.

It is to be noted that the specification of a minimum of 20 microwatts per square centimeter is an erythemogenic dosage intensity that appears to meet the average conditions as known today; serving, as already stated, as a guide in avoiding burns from overexposure to intense sources of ultraviolet radiation, and eliminating possible fraud in the sale of lamps that do not emit ultraviolet radiation in sufficient intensity to qualify as efficient therapeutic agents. As mentioned in the preceding paper, the ultraviolet radiant flux emitted by the present day "professional models" of the various kinds of therapeutic lamps greatly exceed this specified minimum value.

It is hardly to be expected that this specification will meet all emergencies without supplemental information. For example, suppose that a lamp should be developed, consisting of a high voltage (with condenser) discharge between two electrodes of magnesium, in which most of the ultraviolet radiation is emitted in a single, intense line at about 280 millimicrons. Such a source is well known to physicists.

The emission line of magnesium at 280 millimicrons is in the region of a strong absorption band in ergosterol, which substance has a powerful antirachitic action after exposure to ultraviolet radiation. No data are at hand showing what photochemical action this single emission line would have on the human skin; but it is interesting to note that, because of the low susceptibility of the skin in this spectral region, the erythemal reaction [2] would be relatively weak. On this basis it would therefore appear to be possible to apply a more powerful irradiation from such a lamp without producing a burn than with lamps now in use. Whether such a procedure is desirable is undetermined, though it might be useful in researches on inanimate material. Such sources are now available in the form of cored carbon arcs, which, however, are not so nearly homogeneous in ultraviolet radiation.

A recently introduced source of ultraviolet radiation that requires further physiologic tests is the so-called cold quartz lamp, in which about 95 per cent of the total radiation of wavelengths less than and including 313 millimicrons is emitted in the resonance line of mercury at 254 millimicrons (more exactly, 2,537 angstroms [3]).

The ultraviolet radiant flux,[3] as well as the erythemogenic efficiency of such a lamp is relatively high. Nevertheless, in spite of its high erythemogenic efficiency, further biologic information is needed concerning its effectiveness in healing rickets and in the activation of ergosterol; for, according to published records,[4] when the source of ultraviolet consists of wavelengths longer than 2,750 angstroms, over 60 per cent of ergosterol is converted into vitamin D, whereas, if the lines at 2,537 and 2,654 angstroms are present, only a small amount of ergosterol is converted into vitamin D, after which a further exposure gradually destroys the vitamin D that was formed on first exposure.

As stated in a previous paper,[3] since the publication [4] of experiments on irradiation of cod liver oil, ergosterol and cholesterol, showing that wavelengths shorter than 280 millimicrons are destructive to vitamin D, the feeling is abroad that it is undesirable to use ultraviolet rays of wavelengths shorter than about 280 millimicrons for therapeutic purposes, especially in lamps sold for home use.

1. Coblentz, W. W.: Ultraviolet Radiation Useful for Therapeutic Purposes, J. A. M. A. **98**: 1082 (March 26) 1932.
2. Coblentz, W. W.; Stair, R., and Hogue, J. M.: Bur. Stds. J. Research **8**: 541 (April) 1932.
3. Coblentz, W. W.: Sources of Radiation and Their Physical Characteristics, J. A. M. A. **97**: 1965-1967 (Dec. 26) 1931.
4. Reerink, E. H., and Van Wijk, A.: Production of Vitamin D, Biochem. J. **23**: 1294, 1929. Heilbron, I. M.; Kamm, E. D., and Morton, R. A.: Ibid. **21**: 78, 1927; J. Chem. Soc. London **268**: 2000, 1927. Bills, C. E.; Honeywell, E. M., and Cox, W. M., Jr.: J. Biol. Chem. **80**: 557 (Dec.) 1928. Wyman, E. T.; Holmes, A. D.; Smith, L. W.; Stockbarger, D. C., and Pigott, Madeleine G.: Does the Irradiation of Cod Liver Oil Increase Its Antirachitic Potency?" Am. J. Dis. Child. **34**: 753 (Nov.) 1927. Maughan, G. H.: Am. J. Physiol. **87**: 381 (Dec.) 1928.

THE ERYTHEMOGENIC UNIT OF DOSAGE

The ultraviolet unit of dosage cannot be a concise, tangible specification like a quinine pill. Rather, in a broad sense, the aforementioned specification of 20 microwatts per square centimeter of homogeneous radiation, of the wavelength 297 millimicrons, is analogous to a 1 grain (0.065 Gm.) pill of pure quinine sulphate; and the equivalents of heterogeneous ultraviolet radiation, from various sources, are vaguely analogous to the equivalents that would be specified if, instead of pure quinine sulphate, the material were administered in the form of cinchona bark, or quinine derivatives, of various degrees of purity or concentration.

This analogy is not complete, but it should convey the idea of the difficulties encountered in attempting to standardize ultraviolet dosimetry. For example, the physiologic effect of the pure quinine may perhaps be different from that of cinchona bark. Similarly, the physiologic effect of the homogeneous emission line (297 millimicrons) may be somewhat different from that of the heterogeneous source of ultraviolet radiation. Indeed, differences in the color of the erythema and in the amount of pigmentation produced by different sources are recognized.

However, some sort of standardization is needed in order that workers can compare their results. At present, only in a very general way are experimental results comparable. For example, one worker uses a cadmium photocell standard; others use foot candle, or fluorescent photometer standards; and still others use the mercury lamp as a "high sun standard," with no certainty of constancy of the source.

The unit of dosage of ultraviolet radiation has been discussed by various writers, including myself.[5] The various proponents have dealt with this question from two points of view; viz., the specification of the unit in terms (*a*) of radiant power in microwatts per square centimeter, and (*b*) of total energy in ergs per square centimeter. In my previous paper,[1] the ultraviolet unit of dosage was defined in terms of radiant power and, as used, was merely a symbol or an abbreviation to summarize a complex of several variables that enter into the administration of ultraviolet radiation.

In the present communication the unit of dosage is specified in terms of the total ultraviolet energy utilized. When followed through to its logical conclusion, the utilization of the total radiant energy, homogeneous radiation of wavelength 297 millimicrons being employed as a standard, appears to be the simplest, the most direct and the most easily reproducible procedure yet tried experimentally.

This specification is based on the results of an extensive investigation[6] in which a comparison was made of the erythema produced by measured amounts of heterogeneous ultraviolet radiation, evaluated by a balanced thermocouple and filter radiometer. In this evaluation, the erythema produced by a measured amount of homogeneous radiation of wavelength 297 millimicrons was used as a standard. In spite of the fact that the sources differed very markedly in ultraviolet spectral energy distribution, a close agreement was obtained between the observed and the calculated exposures, indicating that the radiometric evaluation is reliable. Since such a radiometer is nonselective and can be calibrated in absolute units, it appears to be the most reliable primary standard of comparison we have yet tested.[6]

The following specification, using total energy, instead of radiant power, is merely an amplification of my earlier suggestions [5] of using erythemogenic equivalents, which could not be specific at that time because of the lack of rigidly controlled physical and physiologic (erythemal) measurements, now available.[6] The present specification appears to meet all the requirements that can be foreseen at present. If it does not greatly simplify the manner of recording the experimental data, it will at least introduce a reproducible system that will bring some order out of the present chaos.

In my previous paper [1] (numerical data revised, herewith) it was shown that, for the various sources of heterogeneous ultraviolet radiation of wavelengths less than and including 3,130 angstroms, the erythemogenic equivalent of 20 microwatts per square centimeter of homogeneous radiation of wavelength 2,967 angstroms, in microwatts per square centimeter, is approximately as follows: the sun at midday, midsummer, midlatitude, sea level $(20 \div 0.22 =)$ 91; the Mazda S-1 lamp, 80; the Mazda S-2 lamp, 93; the high temperature quartz mercury arc, 58; the so-called cold quartz mercury vapor lamp, 36; the carbon arc, 45 to 90 (the latter value is estimated; depending on the electric current, the kind of carbons, and windows), and the Mazda CX tungsten filament lamp 130 (estimated).

Furthermore, in the preceding paper [1] it was shown that it requires about 200,000 ergs per square centimeter of homogeneous radiation, of the wavelength of maximum erythemogenic effectiveness, to produce a minimum perceptible erythema on the average untanned skin. The unit of dosage should therefore be some lower value in order to guard against overexposure.

If we adopt 10,000 ergs (10 kiloergs) per square centimeter of homogeneous radiation of the wavelength 297 millimicrons as the erythemogenic unit of dosage of ultraviolet radiation and call it the Finsen unit (F. U.), then the erythemogenic equivalent dosage of heterogeneous ultraviolet radiation, of wavelengths less than and including 313 millimicrons, emitted by the various aforementioned sources is as follows:

1 F. U. = 10,000 ergs per square centimeter of standard wavelength, 297 millimicron, radiation.
= 45,500 ergs per square centimeter of midday, midlatitude, midsummer, sea level, solar radiation.
= 40,000 ergs per square centimeter of Mazda S-1 lamp radiation.
= 46,500 ergs per square centimeter of Mazda S-2 lamp radiation.
= 29,000 ergs per square centimeter of quartz mercury arc radiation.
= 18,000 ergs per square centimeter of "cold quartz" radiation.
= 22,500 to 45,000 ergs per square centimeter of carbon arc radiation. (The latter value is estimated, depending on the kind of carbon and on the window.)

From the foregoing correlation of the physiologic and the radiometric measurements it will be evident why much of the published data, now available, appears to be inconsistent and may be misleading. The published measurements do not include a factor that

5. Coblentz, W. W.: Instruments for Measuring Ultraviolet Radiation and the Unit of Dosage, M. J. & Rec. **130**: 691 (Dec. 18) 1929.
6. Coblentz, W. W.; Stair, R., and Hogue, J. M.: Tests of a Balanced Thermocouple and Filter Radiometer as a Standard Ultraviolet Dosage Intensity Meter, Bur. Stds. J. Research **8**: 759 (June) 1932. (R. P. No. 450, 10 cents; obtainable only from the Superintendent of Documents, Washington, D. C.)

equates the erythemal response. For example, some time ago I was called on to explain why the short wavelength ultraviolet solar radiation, which was relatively large in amount as measured with a photoelectric cell, did not produce an erythema in a much shorter time than a much smaller amount of ultraviolet radiation emitted by a quartz mercury arc lamp. If the experimenter had multiplied the total ultraviolet radiation measurements by the erythemogenic efficiencies of these two sources (not available then; also by a factor for selectivity of his photocell), he would have found a closer agreement in their erythemal effects.

For, as mentioned in a recently published paper,[6] when the factor that equates the physiologic (erythemal) response is taken into consideration there is good agreement between the calculated and the observed times of exposure to produce a minimum perceptible erythema, employing sources differing widely in spectral quality and in total intensity of ultraviolet radiation useful for therapeutic purposes.

CONCLUSION

As an illustration of the practical application of the Finsen unit, let us suppose that, from practical experience, it is found that the average person can be given 20 Finsen units daily of Mazda S-2 irradiation without producing an overexposure, and that the particular Mazda S-2 lamp available for use emits a radiant flux of 100 microwatts per square centimeter (1,000 ergs per second) at the standard operating distance. Then, from the described correlations, it follows that 20 Finsen units ($46{,}500 \times 20$) $= 930{,}000$ ergs per square centimeter of Mazda S-2 lamp radiation and hence that an exposure of ($930{,}000 \div 1{,}000 =$) 930 seconds, or 15½ minutes daily, is required to produce a minimum perceptible erythema.

If it requires 100 exposures to effect a cure, this will amount to a total of 2,000 Finsen units of Mazda S-2 lamp radiation. This seems simpler than to report the total energy in ergs, which in this instance would amount to 93,000,000 ergs per square centimeter of Mazda S-2 lamp radiation.

2737 Macomb Street, N.W.

GUEDEL OXYGEN METER ACCEPTABLE

The Guedel Oxygen Meter, manufactured by the Foregger Company, Inc., New York City, is designed to indicate visibly the volume of oxygen flowing into a therapeutic oxygen tent. According to the firm, the Guedel Oxygen Meter consists of a control valve to reduce and regulate the pressure of the oxygen from a supply cylinder and a sight-feed to indicate the amount of oxygen fed to a patient within a tent or therapeutic gas chamber. A control valve is provided with a standard pressure gage designed to indicate the pressure in the oxygen tank. The sight-feed is essentially a wash bottle containing a metal gas tube with five holes submerged below the water level. Each hole is calibrated, according to the firm, to permit the passage of 2 liters of oxygen per minute, making a total of 10 liters per minute maximum. The firm claims that this meter is reliable and that the exact amount of oxygen flowing may be read within an error of considerably less than 2 liters per minute within the range of 10 liters per minute.

Guedel Oxygen Meter.

The Council on Physical Therapy declares the Guedel Oxygen Meter acceptable for inclusion in its list of accepted devices.

Council on Pharmacy and Chemistry

REPORTS OF THE COUNCIL

COMPARATIVE STUDIES OF MERCUROCHROME-220 SOLUBLE AND OTHER ANTISEPTICS

The Council has authorized publication of the appended report, "Comparative Studies on Mercurochrome and Other Antiseptics," by W. F. von Oettingen, O. V. Calhoun, V. A. Badertscher and R. E. Pickett. In authorizing publication of this report the Council directed that it be explained that Hynson, Westcott & Dunning have agreed to revise their advertising claims in accordance with the findings of the paper. The Council voted to continue the acceptance of Mercurochrome-220 Soluble, and the description of the product appears in New and Nonofficial Remedies, 1932.

W. A. PUCKNER, Secretary.

COMPARATIVE STUDIES ON MERCUROCHROME AND OTHER ANTISEPTICS

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The manufacturers of mercurochrome-220 soluble [1] (Hynson, Westcott & Dunning), in their advertisements, made claims which seemed inherently questionable; namely, the deep penetration of the drug and at the same time persistent stain of the surface of the skin. The latter would indicate local fixation rather than deep and ready penetration. On the other hand, they claimed a persistent local antiseptic action, attributed to the local fixation. It appeared puzzling that a dye should be at the same time so firmly fixed, and, therefore, essentially insoluble and nevertheless should have marked antiseptic properties; i. e., be capable of reaction with infective agents. The attention of the manufacturers was called to this apparent contradiction by the Council on Pharmacy and Chemistry. They replied at some length, submitting arguments, and citing data from published and unpublished investigations. The arguments did not appear convincing. The references were consulted in the original text; but in some of these the data were scanty, some of the methods used were uncritical, and some of the results were so dubious, that they were unconvincing. It appeared, therefore, that these claims would require stronger evidence to be tenable, and the subject seemed to be sufficiently important to justify the Council in undertaking an independent investigation. This was assigned to the Department of Pharmacology of the School of Medicine of Western Reserve University, under the direction of Torald Sollmann and W. F. von Oettingen. It was decided to confine the investigation essentially to the claims in question, namely, bacteriostatic action and penetration, but to broaden the conclusions by comparison with other

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This investigation has been made with the assistance of a grant from the Committee on Therapeutic Research, Council on Pharmacy and Chemistry, American Medical Association.

1. For the sake of brevity, this product is hereafter referred to as "mercurochrome."

antiseptics. The methods were selected to give definite answers pertinent to the questions; but refinements beyond this were avoided, since they would tend to narrow the scope of the inquiry.

ANTISEPTIC EFFICIENCY

Since the culture-efficiency is not directly at issue, it appeared sufficient to cite the relevant data from the literature. It may not be amiss to point out certain sources of error that may be concerned in the discordant results, and especially in transferring conclusions to other conditions, without adequate controls:

1. In testing the antiseptic action of drugs by applying these to the skin or to the mucous membranes, and sponging the treated area with sterile gauze swabs, and streaking these on sterile culture mediums, enough antiseptic may be transferred to produce bacteriostatic action. The absence of the transfer of effective quantities of the drug should be confirmed by inoculating the cultures with fresh test organisms. The self-defense mechanism of the host may also develop sufficient antiseptic action, as recently pointed out by Arnold and his co-workers,[2] so that treated and untreated areas must be compared. Norton and Novy [2] failed to demonstrate this effect. Presumably it varies in degree and importance.

2. Certain physicochemical conditions must be observed in testing the antiseptic properties. The work of Michaelis and Dernby [3] on hydrocupreines, of Laqueur, Sluyters and Wolff [4] on acridine dyes, of Hiller and Stamler,[5] of Davis,[6] and of Todd [7] on mercurochrome itself, indicates that the antiseptic action may vary considerably with the p_H of the solutions. The presence of serum and proteins also may affect the antiseptic efficiency either favorably or unfavorably, as pointed out by Browning and his co-workers,[8] and by Morgenroth and his school.[9] The solubility of the drug under different conditions, especially with different p_H, is also important (Michaelis and Dernby); so also is its colloidal or crystalloidal state. For many antiseptics, it was found that the number of organisms in contact with the antiseptic, the presence of blood and pus cells and of organs influence markedly the efficiency (Laqueur,[4] Langer,[10] Wells [11]).

Great caution is therefore necessary in transferring results obtained in test-tube experiments; and even animal experiments may give misleading results, for instance, on account of different structure of the tissue, as pointed out by Laqueur [12] for the white mouse in relation to the experiments of Morgenroth with ethyl hydrocupreine (optochin). Morgenroth, Browning and others have emphasized, therefore, that culture experiments afford only general information which must be controlled by the animal experiment, and finally by very critical observations of an adequate number of clinical cases.

The experimental work done on the antiseptic action of mercurochrome may be grouped as studies on the antiseptic action in cultures, on the local antiseptic action in vivo, and on the antiseptic action in vivo with systemic administration. Only the first two groups are of interest for this report.

ANTISEPTIC ACTION OF MERCUROCHROME ON BACTERIAL CULTURES

General Antiseptic Efficiency in Cultures.—From the data collected from the literature it appears that with short exposure (from one to five minutes), concentrations of from 1:100 to 1:5,000 are necessary to kill bacteria; with longer exposure of from fifteen to sixty minutes, concentrations of from 1:5,000 to 1:10,000 are required, and with exposure for from twenty-four to forty-eight hours concentrations of 1:20,000 to 1:40,000 were found to be antiseptic. It also appears that the antiseptic efficiency is increased by an acid reaction. According to Birkhaug,[13] the bactericidal efficiency of mercurochrome is less than that of hexyl resorcinol, mercuric chloride and iodine, but higher than that of phenol. It appears, in this connection, that in wounds and mucous membranes the bactericidal action, the destruction of bacteria, is of greater importance than the bacteriostatic action, the inhibition of bacterial growth, unless the tissue is continuously bathed with the antiseptic in a soluble and active form.

The Effect of p_H on the Antiseptic Action of Mercurochrome.—Young, White and Swartz [14] observed no growth of Staphylococcus aureus in mercurochrome urine mixtures of the p_H 6.4 in concentrations of 1:1,000 after one minute, and of 1:5,000 after five minutes' exposure. Lancaster, Burnett and Gaus [15] saw no growth of the organisms in mercurochrome Ringer solutions of higher p_H in concentrations of 1:1,000, after six to ten minutes, and in such of 1:10,000 after thirty to sixty minutes' exposure; mercurochrome being, therefore, less effective at a higher p_H. Todd [7] similarly found the antiseptic action of mercurochrome for several organisms considerably reduced, near the neutral point, as compared with the more acid solutions. This was confirmed by Hiller and Stamler,[5] who inoculated broth of different p_H (7.5 to 5.3) containing varying concentrations of mercurochrome with B. coli cultures. After forty-eight hours' incubation, one loop of each tube was transferred to endo agar plates, which were read after incubation for twenty-four hours. Under these circumstances, they found that concentrations of 1:5,000 killed the organisms at every p_H. With concentrations of 1:20,000, there were a few colonies at p_H 7.5 to 7.1, and with lower p_H the cultures were negative. Concentrations of 1:40,000 showed luxurious growth in alkaline mediums and no growth in the acid series, except for a peculiar range between p_H 6.3 and 5.9.

Effect of Mercurochrome on Different Organisms.—Birkhaug [13] determined the phenol coefficient of mercurochrome for different organisms as follows: Staphylococcus aureus, 1.7; Streptococcus hemolyticus, 3.0; B. coli, 2.0; gonococcus, 2.2; B. anthracis, 4.6; B. subtilis, 3.7. Simmons [16] found that 2 per cent aqueous solution of mercurochrome failed to kill Staphylococcus aureus in ten minutes or Streptococcus

2. Arnold, Gustafson, Hull, Montgomery and Singer: Am. J. Hyg. **11**: 345 (March) 1930. Norton, J. F., and Novy, M. F.: Am. J. Pub. Health **21**: 1117 (Oct. 1) 1931.
3. Michaelis, L., and Dernby, K. G.: Ztschr. f. Immunitätsforsch. u. exper. Therap. **34**: 194, 1922.
4. Laqueur, Sluyters and Wolff: Ztschr. f. d. ges. exper. Med. **42**: 247, 1924.
5. Hiller, R. I., and Stamler, A. E.: J. Urol. **22**: 699 (Dec.) 1929.
6. Davis, E. G.: Am. J. M. Sc. **161**: 251 (Feb.) 1921.
7. Todd, A. T.: Lancet **2**: 1017 (Nov. 14) 1925.
8. Browning, Cohen, Ellingworth and Gulbranson: Proc. Roy. Soc. London B **105**: 99, 1930.
9. Morgenroth, J.: Deutsche med. Wchnschr. **45**: 505 (May 8) 1919.
10. Langer, H.: Ztschr. f. d. ges. exper. Med. **27**: 174, 1922.
11. Wells, P.: Ztschr. f. d. ges. exper. Med. **28**: 347, 1922.
12. Laqueur, F.: Ergebn. d. inn. Med. u. Kinderh. **23**: 467, 1923.
13. Birkhaug, K. E.: Metaphen (4-Nitro-3, 5-Bisacetoxymercuri-2-Cresol), J. A. M. A. **95**: 917 (Sept. 27) 1930.
14. Young, H. H.; White, E. C., and Swartz, E. O.: A New Germicide for Use in the Genito-Urinary Tract: "Mercurochrome-220," J. A. M. A. **73**: 1483 (Nov. 15) 1919.
15. Lancaster, W. B.; Burnett, F. L., and Gaus, L. H.: Mercurochrome-220, Clinical and Laboratory Report on Its Use in Ophthalmology, J. A. M. A. **75**: 721 (Sept. 11) 1920.
16. Simmons, J. S.: Bactericidal Action of Mercurochrome-220 Soluble and Iodine Solutions in Skin Disinfection, J. A. M. A. **91**: 704 (Sept. 8) 1928; J. Infect. Dis. **39**: 273 (Oct.) 1926.

scarlatinae in five minutes; but it killed Streptococcus pyogenes in two and one-half and Escherichia coli in one minute. The favorable results reported by Scott and Hill [17] appear to have been due chiefly to the solvent, judging by the data of their table. According to Simmons, all the mercurochrome solutions failed to kill the spores of B. anthracis in three hours, being in this respect distinctly inferior to tincture of iodine, which killed spores after one hour's contact. However, even this time is probably far too long to have any real therapeutic importance.

Eyre, Notton and Pope [18] determined the minimal inhibiting concentration of mercurochrome as 1:3,500 for B. coli and as 1:8,000 for Staphylococcus longus-hemolyticus. Swartz and Davis [19] found for gonococci as minimal antiseptic concentration after five minutes 1:4,000, and after twenty minutes' contact 1:16,000. It is not possible to explain why these results are so different from those reported by Birkhaug, who found 1:180 as the highest dilution of mercurochrome that would kill gonococci after ten but not after five minutes.

It appears, therefore, that the bactericidal efficiency of mercurochrome, as of most antiseptics, varies with different organisms.

Effect of Serum and of Blood on the Bactericidal Action of Mercurochrome.—In the presence of 50 per cent serum, Miss Hill [20] found the effective concentration of mercurochrome with one minute's exposure to be for B. coli 1:200, for Staphylococcus aureus 1:90, for B. pyocyaneus 1:90, and for pneumococci 1:50. Lancaster, Burnett and Gaus [15] found the minimal effective concentration in serum as 1:100 in one hour, and as 5:100 in ten minutes in contrast to 1:1,000 in from six to ten minutes, and of 1:10,000 in from thirty to sixty minutes in Ringer solution. In comparing the efficiency in dilutions made with 50 per cent human serum and with distilled water, Birkhaug [13] found the highest effective dilution killing organisms after ten but not after five minutes for Staphylococcus aureus 1:40 and 1:140; for Staphylococcus hemolyticus 1:70 and 1:300; for B. coli 1:30 and 1:60; for gonococci 1:50 and 1:80, and for B. anthracis 1:60 and 1:320. The first of each pair of numbers refers to serum, the second to water dilutions. Hill and Ellis [21] reported experiments on the protection of animals against multiple lethal doses of pneumococci by giving mercurochrome, horse serum alone, and mixtures of mercurochrome and horse serum. The animals treated with the mixture showed a markedly favorable therapeutic response as compared with mice receiving either mercurochrome or horse serum alone. The authors themselves stated that this therapeutic action is not related to direct germicidal action, and it appears to be a nonspecific reaction.

From these data it appears that the presence of serum does greatly reduce the antiseptic action of mercurochrome.

Young, White and Swartz [14] compared the antiseptic action of mercurochrome in urine (p_H 6.4) with that in hydrocele fluid. They found that in the urine mixture B. coli and Staphylococcus aureus were killed by concentrations of 1:1,000 in five minutes, and in the hydrocele fluid only after sixty minutes' contact. In defibrinated blood, Piper [22] found that mercurochrome inhibited the growth of Staphylococcus hemolyticus completely in concentrations of 1:8,000 in forty minutes, and with 1:6,000 only two colonies were counted at the end of one hour. Since the number of experiments was apparently limited and no details of the technic were given, they need further confirmation. Simmons [16] found that mercurochrome in aqueous solution of 1:100 killed staphylococci in fifteen minutes, but not when blood was added to the mixtures. J. E. Walker [23] found that mercurochrome in concentrations of from 1:25,600 to 1:400 has no appreciable effect on the bactericidal action of fresh defibrinated blood for B. coli, 1:100 sterilized the blood for staphylococci and 1:200 for streptococci. Brill and Myers [24] found that mercurochrome in blood culture mediums had no antiseptic value, even after twenty-four hours' contact in concentrations of 1:10,000, as tested with Streptococcus viridans, Staphylococcus albus and B. coli.

Hench, Snell and Greene [25] state that, in bile, mercurochrome is bactericidal in a concentration of 1:20,000. Hill and Scott,[26] using the Beckwith method, found that mercurochrome bile mixtures of 1:1,000 killed all bacteria tested except Staphylococcus aureus, within one hour, in the same time concentrations of 1:50,000 killed B. typhosus 3, the experiments being controlled with pure bile. Comparison of these figures with those obtained by Young and his co-workers indicates that the presence of bile has a distinct inhibiting action on the antiseptic action of mercurochrome. This was confirmed by Simmons,[16] who found that aqueous mercurochrome solutions of 1:5,000 killed typhoid bacilli in five minutes, whereas, with the same concentration in ox bile, thirty minutes' contact was necessary to kill the organisms.

THE LOCAL BACTERIOSTATIC ACTION OF MERCUROCHROME

The local bacteriostatic action of mercurochrome has been studied in several ways. Tinker and Sutton [27] reported that a 5 per cent solution of mercurochrome in 50 per cent alcohol failed to kill most of the resistant and some of the less resistant pathogenic bacteria when applied to the skin. Scott and Hill [17] pointed out that, although aqueous solutions of 1 to 10 per cent are bactericidal against certain organisms in vitro, such solutions are generally less effective in disinfecting the skin. Later they [28] found that a 2 per cent acetone-alcohol-aqueous solution gave better results. This was confirmed by Simmons,[16] who reported that 5 per cent alcoholic (50 per cent) solutions gave somewhat better results than the aqueous solutions but was less effective than alcoholic solutions of iodine (3.5 per cent) in killing certain spore forming bacteria. This was substantiated by Reddish (quoted from Simmons). However, none of the agents are absolutely effective, and there may be some doubt as to the significance of these differences. Simmons found in disinfection experi-

17. Scott, W. W., and Hill, Justina H.: J. Urol. **14**: 135 (Aug.) 1925.
18. Eyre, I.; Notton, H. E. F., and Pope, W. J.: Brit. M. J. **2**: 238 (Aug. 11) 1928.
19. Swartz, E. O., and Davis, D. M.: Action of Mercurochrome-220 on Gonococcus, J. A. M. A. **76**: 844 (March 26) 1921.
20. Hill, Justina H., quoted by Smith, D. T.: Causes and Treatment of Otitis Media, Am. J. Dis. Child. **28**: 1 (July) 1924.
21. Hill, Justina H., and Ellis, M. G.: Bull. Johns Hopkins Hosp. **44**: 40 (Jan.) 1929.
22. Piper, E. B.: Am. J. Obst. & Gynec. **4**: 532 (Nov.) 1922.
23. Walker, J. E.: Arch. Path. & Lab. Med. **1**: 199 (Feb.) 1926.
24. Brill, I. C., and Myers, H. B.: Mercurochrome-220 Soluble and Gentian Violet, J. A. M. A. **84**: 879 (March 21) 1925.
25. Hench, P. S.; Snell, A. M., and Greene, C. H.: J. Pharmacol. & Exper. Therap. **25**: 142, 1925.
26. Hill, J. H., and Scott, W. W.: Mercurochrome-220 Soluble as a Biliary Antiseptic, Arch. Int. Med. **35**: 503 (April) 1925.
27. Tinker, M. B., and Sutton, H. B.: Ann. Surg. **82**: 640 (Oct.) 1925; Inefficiency of Most of the Commonly Used Skin Antiseptics, J. A. M. A. **87**: 1347 (Oct. 23) 1926.
28. Scott and Hill (footnote 17). Scott, W. W.; Hill, Justina H., and Ellis, M. G.: Action of Mercurochrome and Tincture of Iodine in Skin Disinfection, J. A. M. A. **92**: 111 (Jan. 12) 1929.

ments with normal rabbit skin that mercurochrome had less bactericidal action on Staphylococcus aureus, Streptococcus pyogenes, Streptococcus scarlatinae, B. coli and Claustridium welchii than had iodine solution. A 2 per cent mercurochrome solution failed to kill the organism either on or in the skin in fifty-five out of fifty-six experiments; 2 per cent acetone-alcohol-aqueous solution caused some reduction of the organisms but failed to disinfect the skin in forty-five out of fifty experiments. The 5 per cent alcoholic (50 per cent) solution reduced the number of bacteria in a similar way but failed to disinfect in forty-five out of forty-six experiments. The 2 per cent acetone-alcohol-aqueous solution failed to kill or to lower the virulence of B. anthracis spores, whereas tincture of iodine was effective. Reddish and Drake [29] reported similar studies, which led them to believe that as a skin disinfectant the 2 per cent acetone-alcohol-aqueous solution of mercurochrome is as effective as iodine, the 2 per cent aqueous solution being less effective. Bloomfield [30] painted areas of the tongue with 10 per cent aqueous solutions of mercurochrome. Swabs taken ten minutes later and cultures showed a profuse growth of green streptococci. Rodriguez [31] studied the antiseptic action of mercurochrome on the mucous membranes of the mouth. He found that rinsing of the mouth with 2 per cent mercurochrome solution had no effect in ten out of ten cases after one minute contact; after three and five minutes' exposure there was a decided reduction in the number of colonies. The germicidal effect was most marked against gram-negative cocci, less against gram-positive bacilli, and practically nil against gram-positive cocci. The 5 per cent alcoholic solution gave better results; but in only two out of ten cases was the disinfection complete.

Mayes and Ullian [32] recently reported experiments on the antiseptic action of mercurochrome in the birth canal. They report that after lavage with 2 per cent aqueous mercurochrome solution, the number of colonies was considerably reduced as compared with untreated cases and with lavage with compound solution of cresol. In a more recent publication, Mayes [33] used mercurochrome in the preparation of the birth canal by spraying a 4 per cent aqueous solution on the perineum and injecting 3 drachms (11 cc.) of a 2 per cent solution into the vagina. He compared the morbidity of patients treated in this way with that of patients treated only externally with iodine. He reports that the percentage of morbidity of the latter group was 12.4 per cent (2,072 cases) as compared with 5.6 per cent in the first group (5,102 cases). From this the conclusion appears justified that the prepartum disinfection of the birth canal with mercurochrome does decrease the incidence of infective responses. However, Mayes has apparently not made comparative observations with other antiseptics applied in the same manner as mercurochrome. An editorial comment [33a] in THE JOURNAL states that "other obstetricians, among them Williams at Johns Hopkins and Baldwin at the University of Michigan, failed to obtain any striking results" but that Henderson of Colorado reports a similar reduction of the morbidity. "Although the numbers of this study from the University of Colorado are not large, the care with which the experiment has been controlled gives significance to the result."

The local antiseptic action of mercurochrome on abscesses has been studied by Sanner and Hill.[34] They produced artificially abscesses in guinea-pigs and treated these with 1 and 2 per cent solutions of mercurochrome. They observed a reduction of the number of organisms and a more prompt healing than in the controls. However, their experiments do not seem conclusive, because the controls were not treated in the same way with some inert material, such as physiologic solution of sodium chloride, to eliminate the possibility of having removed the germ mechanically by lavage.

This survey of the literature does not pretend to be exhaustive; but it includes all the original investigations that were cited by the manufacturers in support of their claims for mercurochrome.

Because these data do not give definite evidence of the bacteriostatic action of mercurochrome, additional experiments were carried out in this laboratory:

The skin of patients preparing for an operation was painted with the antiseptic solutions twelve hours, then one hour, and again fifteen minutes prior to the operation, three coats being applied at each treatment and each coat being allowed to dry before the next was applied. The solutions used were 3 per cent alcoholic solution of iodine, an alcoholic solution of mercuric chloride 1:4,000, and 2 per cent acetone-alcohol-aqueous solutions of mercurochrome, gentian violet and hexylresorcinol. The solvent for these dyes consisted of 10 parts of acetone, 52.5 parts of alcohol and 37.5 parts of water, as suggested by Tinker and Sutton.[35]

In this way nine coats were applied to the skin of patients, and no further treatment was given prior to the operation. At this time a specimen of skin was excised, which was delivered the same day with aseptic precautions, and strips of 0.5 by 1 cm. surface were implanted into agar plate cultures of Staphylococcus albus before they were congealed and incubated for twenty-four hours at 37 C. None of five samples treated with mercurochrome, coming from different patients, showed a bacteriostatic halo around the tissue in the culture, thus indicating that the dye was fixed on the surface of the skin and did not develop any bacteriostatic action in contact with the culture. Similarly negative results were also obtained with one sample taken one hour after the administration of three coats. Of the other antiseptics used in these experiments, mercuric chloride and iodine showed marked bacteriostatic action in two out of two cases; gentian violet exhibited in two out of two cases a distinct, and hexylresorcinol in three out of three no bacteriostatic, property.

These experiments with human skin had to be discontinued, because stitch abscesses occurred even after nine coats of the mercurochrome, applied in intervals as described. This is a practical confirmation that mercurochrome has no or only very little bacteriostatic value, whereas mercuric chloride, iodine and, to a less degree, gentian violet show bacteriostatic properties. The manufacturers of mercurochrome claim that the acetone-alcohol-aqueous solution of mercurochrome is more effective on the skin than is the aqueous solution, because it penetrates fat. As has been pointed out, samples of skin painted with nine coats of the alcohol-acetone mercurochrome did not arrest bacterial growth. This does not exclude the possibility that the moist solution may kill some bacteria on the surface, partly by the dye and partly by the solvent itself. Further experiments with mercurochrome were made on the shaved skin of rabbits, to which one coat of 2 per cent aqueous solution of mercurochrome was applied so as to obviate the complication of the disinfectant action of the alcohol-acetone solvent. From this skin one sample was removed immediately

29. Reddish, G. F., and Drake, W. E.: Mercurochrome-220 Soluble and U. S. P. Tincture of Iodine, J. A. M. A. **91**: 712 (Sept. 8) 1928.
30. Bloomfield, A. L.: Bull. Johns Hopkins Hosp. **34**: 65 (Feb.) 1923.
31. Rodriguez, F. E.: Mercurochrome and Iodine as Disinfectants of Mucous Membrane of Mouth, J. A. M. A. **51**: 708 (Sept. 8) 1928.
32. Mayes, H. W., and Ullian, S.: Surg., Gynec. & Obst. **51**: 345 (Sept.) 1930.
33. Mayes, H. W.: Surg., Gynec. & Obst. **54**: 529 (March) 1932.
33a. Antisepsis During Labor, Current Comment, J. A. M. A. **95**: 667 (Aug. 30) 1930.
34. Sanner, J. E., and Hill, Justina H.: Surg., Gynec. & Obst. **46**: 496 (April) 1928.
35. Tinker, M. B., and Sutton, H. B.: Skin Disinfection with Especial Reference to Use of Acriflavine, J. A. M. A. **88**: 1560 (May 17) 1927.

after the drying, another after one hour, and a third after four hours; none of these showed a bacteriostatic action when tested as described.

THE PENETRATION OF MERCUROCHROME

Deep penetration of mercurochrome is one of the main claims of the manufacturers. Young, White and Swartz [14] stated that, during intravenous injection into the rabbit ear, the dye spread within a few seconds from the vein into the tissues, so that the whole ear assumed a reddish pink color, which persisted with varying intensity for from twenty-four to forty-eight hours. In order to determine the penetration of mercurochrome into the tissue of the urinary tract, they injected an ounce of a 1 per cent solution into the urinary bladder of a rabbit by means of a catheter. Examination of frozen sections and of paraffin sections of the formaldehyde hardened tissue showed a deep staining of the epithelial layer of the urethra; this was most marked in the superficial layer, less distinct in the mucosa, and in some places even the muscularis was stained. Similar experiments on the staining of the renal pelvis were performed by O'Conor [36] in dogs. He opened the bladder in the median line and injected the solutions of different antiseptics into the pelvis by means of a ureteral catheter. He found that mercurochrome stained the superficial layers and that it was uniformly distributed throughout the submucosa and the muscularis. Examination of serial sections of the kidney twenty minutes after the injection of mercurochrome by gravity reveals that the dye had penetrated the tubules up to the glomeruli. Jones [37] studied the diffusion of 1 per cent solutions of mercurochrome and of other antiseptics into cervical mucus placed in petri dishes and found that the diffusion velocity was most marked with acid fuchsin, followed by mercurochrome, gentian violet, acriflavine hydrochloride, mild silver protein and strong silver protein, in the order given. He also filled solutions of the same strength into empty excised intestines of rabbits and rinsed these afterward with water. He found that acid fuchsin, mercurochrome and acriflavine hydrochloride left deep and permanent staining, which went to the depth of the epithelium. Solutions containing 5 per cent of the dye and 5 per cent of glycerin were injected in quantities of 5 cc. into the vagina of rabbits and allowed to remain there for fifteen minutes. The microscopic examination showed a deep staining of the vagina and of the cervix. From the examination of frozen sections it appeared that the staining was not uniform, decreasing gradually in the higher sections; but in those sections which were stained the dye had penetrated into the muscularis. Todd [7] filled the bladder of one rabbit with 5 per cent solutions of mercurochrome and kept it filled for one hour, when the bladder was emptied. After twenty-four hours, the animal was killed, and it was found that the bladder was deeply stained throughout, and that also the peritoneum surrounding the bladder and the pelvis of the kidney was deeply stained. Sections of the tissue were evidently not made. All other references submitted by the manufacturers as evidence for the penetrating action of mercurochrome contain only statements without experimental data for these claims.

From the foregoing data it appears that the penetrating action of mercurochrome into the tissue has been studied with some care only in the urinary tract, and that studies on the penetrating action into the skin and the muscular tissue are missing. Experiments made to supply these deficiencies also brought to light serious sources of error that inhered in the earlier work:

Penetration of Leather.—Before further experiments were done on the penetrating action into living tissue, a model experiment was performed with leather, which has considerable structural and chemical similarity to dead tissue. For this purpose, pieces 5 mm. thick were chosen, half of which were extracted with ether in order to remove the fat. Both samples were painted with three coats of mercurochrome, or with other agents, as indicated in table 1, each coat being allowed to dry before the next was applied.

TABLE 1.—*Penetration of Mercurochrome, Gentian Violet and Iodine into Leather*

Antiseptic	Ether Extracted Leather	Untreated Leather
2% aqueous mercurochrome	stained 0.25 mm. deep in regular line	stained 0.25 mm. deep in regular line
2% acetone-alcohol-aqueous mercurochrome	stained 0.25 mm. deep in irregular line	less penetration than in ether extracted sample
U. S. P. tincture of iodine	stained 0.25 to 0.5 mm.; deep penetration, deeper in center	0.5 to 1 mm. deep; stained fairly uniform
aqueous solution of gentian violet 1/500	no penetration	no penetration

This table shows that the depth of penetration is best with iodine; next ranges the acetone-alcohol-aqueous solution of mercurochrome, the aqueous solution of mercurochrome, and last that of gentian violet, the latter showing no penetration. These experiments give a picture of the penetration of these agents into a fibrous colloid system which is actually penetrable and stainable by mercurochrome and somewhat analogous to the physical structure of dead tissues.

Penetration into Living Human Skin.—All samples of human skin that had been treated with nine coats of mercurochrome in 2 per cent acetone-alcohol-aqueous solution, as described previously, were studied histologically. In order to avoid solution of the dye and secondary staining, frozen sections were made of the fresh tissue and examined without contact with any solvents as well as after embedding in glycerin. The latter, however, did not change or dissolve the dye when the slides were examined immediately. It was found that only the most superficial corneous layer was stained. In no instance was a deeper penetration into the skin observed.

The same results were obtained by painting the tongue of dogs with 2 per cent acetone-alcohol solutions and aqueous solutions of mercurochrome, and identical results were found microscopically in sections of rabbit skin.

Penetration into Muscular Tissue.—In order to ascertain whether the dye stains the muscular tissue more readily and deeper than the skin, freshly skinned frog legs were placed in 2 per cent solutions of mercurochrome in water and in the acetone-alcohol-water mixture, and pieces were taken at intervals and studied microscopically. After thirty minutes with the aqueous solution, the muscle showed some staining only on the surface, about 0.5 mm. deep, the depth of the color being more marked on the extreme surface. After one hour the staining zone was about 1 mm. deep, and after eighteen hours the dye had penetrated deeper into the tissue. The intensity of the staining was, however, not uniform, some fibers being deeply stained, others less, and some not at all. The same results were obtained with the acetone-alcohol-aqueous solution, with the only difference that on longer exposure the tissue showed signs of dehydration.

In order to decide the reason why in these experiments the muscle fibers were not stained uniformly, the following experiments were made:

A 1 per cent aqueous solution of mercurochrome was injected into the aorta of a frog until the skin of the leg showed a definite pink color. After the removal of the skin the muscle showed no coloration. The sciatic nerve of one

36. O'Conor, V. J.: Lavage of Renal Pelvis, J. A. M. A. 77: 1088 (Oct. 1) 1921.
37. Jones, Ray: Northwest Med. 21: 182 (June) 1922; Urol. Cutan. Rev. 27: 692, 1923.

leg was then stimulated with a faradic current. This leg turned more pink than the other one, presumably because the violent contractions caused rupture of some blood vessels. This was confirmed by the microscopic examination of sections in which the staining in the immediate surrounding of the vessels was deeper, gradually losing in intensity.

The effect of mercurochrome on living muscle was also studied with isolated muscle fibers. Teased preparations of the musculus rectus abdominis and of the musculus gracilis of frogs were used. These were observed under the microscope, their life being tested by stimulation with a faradic current by means of a very fine electrode. It was found that those fibers which did not contract were immediately stained on the addition of 2 per cent aqueous mercurochrome solution; the others, only after the response to electrical stimulation had disappeared.

Similar experiments were performed with living frogs. Small areas of skin and of skin with muscle were snipped out of the leg, and then the animal was immersed in 2 per cent aqueous solution of mercurochrome for one hour. After this period the animal was killed and skinned, and sections were made through the muscular tissue. In every instance only the most superficial muscular layer was stained.

In a second series, wounds were produced by cauterization with a hot iron, and the animals treated as before. In these experiments also only the most superficial layer of the muscle was stained; the scab in the necrotic area was deeply stained, but the normal tissue beneath the scab showed no staining.

Instillation of 2 per cent mercurochrome in aqueous and in acetone-alcohol-aqueous solution into wounds of rabbit ears, made by cutting with a scalpel, by snipping out pieces with scissors, and by punching holes with an awl, gave results identical with those in the frog; that is, the stain was confined entirely to the dead tissue.

From these experiments it appears that mercurochrome does not readily penetrate the living muscle, even when the muscle is perfused with the dye through the vessels. On the other hand, dead or necrotic muscular tissue is deeply stained by the dye. As living muscle is in general much more easily penetrated by reagents than is the skin, its failure to be stained by mercurochrome is a further support of the observation that the dye does not penetrate into the living layers of the skin.

Since ophthalmologists have reported marked penetration for mercurochrome, enucleated frog eyes were placed in 2 per cent aqueous and acetone-alcohol-aqueous solutions of mercurochrome for twelve hours. After this period it was found that with both solutions the aqueous humor was stained and with the aqueous solution the lens had also been stained uniformly; with the acetone-alcohol-aqueous solution, however, only the surface, the whole organ being hardened. From this it appears that mercurochrome penetrates the dead cornea of the frog. Experiments with living frogs which were immersed in 2, 5 and 10 per cent aqueous solutions of mercurochrome for periods of from 15 to 120 minutes showed that the dye had penetrated the cornea with the 2 per cent solution after two hours, with the 5 per cent solution after one hour, and with the 10 per cent solution after five minutes. From these data it appears that the living cornea also is permeable to mercurochrome in 2 per cent aqueous mercurochrome solutions when exposed for a sufficient length of time. This may be due to the nature of the cornea, which is more akin to the stratum corneum, to cartilage and to dead leather than to active tissue.

Spreading of the Dye in Subcutaneous Tissue.—In living rabbits, 0.1 cc. of 2 per cent aqueous and of 2 per cent acetone-alcohol-aqueous solutions of mercurochrome, and 0.1 cc. of U. S. P. tincture of iodine were injected into the subcutaneous tissue of the dorsal surface of the ear, between the skin and the cartilage, as far as possible from the main vessels. The diameter of the wheal was measured immediately and after one, two and twenty-four hours, with all three solutions. The immediate diameter of the wheal varied between 9 and 13 mm. and there was no material change within the first two hours. After twenty-four hours, a circumscribed stain could not be recognized but the larger part of the ear was definitely pink. When these ears were amputated under anesthesia and the skin stripped off from the cartilage, about 0.2 cc. of pink fluid was found between the two structures. The skin and the cartilage showed only a slight and superficial staining at the site of the injection, of the original size. Iodine could not be detected, which, however, may be due to the conversion into colorless iodide. Similar experiments performed with intracutaneous injections in rabbits also did not reveal any distinct spreading of the injected material. From these experiments it appears, therefore, that the dye either in aqueous or in acetone-alcohol-aqueous solution does not spread readily when injected into the tissue. The spreading of mercurochrome into the tissue with intravenous injection was studied with 2 per cent aqueous and 2 per cent acetone-alcohol-aqueous solutions. Injection of 0.5 cc. of aqueous solution into the ear vein of rabbits produced staining of the vessels and a slight dilatation of the capillaries and smaller vessels but no general staining or inflammation. Injection of 2 per cent aqueous mercurochrome solutions into the central artery of the rabbit ear caused a staining of the tissue surrounding the artery. This staining was not due to diffusion from the artery but was caused by mechanical spreading of the dye solution from the site of the insertion of the needle during and after the injection. As with hypodermic injections, there was some stained fluid between the cartilage and the skin, and the cartilage itself showed a sharply defined spot corresponding to the stained area of the skin; the sharpness of the outline indicates that the spreading was not due to gradual diffusion into the tissue.

From these experiments it appears that the dye does not readily diffuse from the vein, but when injected into the artery it is distributed over the capillaries and produces uniform staining of the whole ear.

Penetration of Mercurochrome into Mucous Membranes.—The penetration of the dye into the mucous membranes of the urinary tract was studied in five living rabbits. From 10 to 20 cc. of a 2 per cent aqueous solution of mercurochrome was injected slowly into the empty urinary bladder by means of a catheter and kept there for periods of from fifteen minutes to two hours. Then the bladder was emptied and removed from the living animal, under ether or barbital anesthesia. In these experiments, only the most superficial layer of the mucosa was found stained, and frequently the dye could be completely removed with a cotton swab. These results were confirmed by microscopic examination of frozen sections in glycerin. Two other rabbits were killed directly after the injection of the dye into the bladder, and fifteen minutes later the bladder was emptied, removed and studied. Two other animals were killed thirty minutes after the injection and the bladder was removed thirty and sixty minutes later. Under these conditions, that is, in the dead animals, there was a deep staining of the mucosa, submucosa, and also partly of the muscularis. There is therefore a pronounced difference, when the dye is left in the bladder of the dead animals. The penetration of the dye into the walls of the vagina was studied in two living rabbits by injecting 5 cc. of the 2 per cent aqueous mercurochrome solution into the vagina. When emptied and removed, after half an hour, from the living animal, under ether anesthesia, only the mucous and the most superficial layer of the mucosa was found stained. If, however, the animal was killed before the removal of the organ, the mucosa was deeply stained; ten minutes after death, and half an hour later, there was a deep staining of the mucosa, the submucosa and the muscularis.

The penetration of mercurochrome into the mucosa of the intestinal tract was studied in four rabbits and two cats. The animals received from 30 to 50 cc. of 2 per cent aqueous solution of mercurochrome by stomach tube. Loops of intestine were removed under ether anesthesia, one-half to one hour later, in case of the cats after from three to four hours, and examined macroscopically and microscopically. In all instances, only the mucous and the most superficial layer of the epithelium was stained. Similar results were obtained with frogs that were immersed in 2 per cent aqueous solutions of mercurochrome and allowed to swallow some of the solution. In two other rabbits, which were killed prior to the

removal, the mucosa showed deep staining ten minutes after death, and after longer periods the muscularis also showed some staining. The dead rabbit intestine, on the other hand, as used in the diffusion experiments described below, showed a deep and uniform staining of all layers.

The penetration of mercurochrome through living frog skin was studied by immersing small living frogs in cylinders containing 2, 5 and 10 per cent aqueous solutions of mercurochrome. With the 2 per cent solution only a slight staining of the inside of the skin could be observed after one and two hours' exposure; with 5 per cent solutions this was more distinct after two hours; and with the 10 per cent solution the staining of the inside was already marked after immersion for fifteen minutes. As will be shown later, a 2 per cent aqueous solution of mercurochrome can hardly be considered as toxic; 5 and 10 per cent solutions, however, show distinct toxic reactions, and therefore the deeper penetration of the dye with longer exposure and more concentrated solutions cannot be considered as a phenomenon of the normal living skin. If mercurochrome penetrates so poorly in the normal frog skin, which is generally a good absorbing surface, it would penetrate less into the human skin, which is markedly less permeable than the frog skin.

From these experiments it appears that 2 per cent aqueous solutions of mercurochrome do not penetrate the living tissue of the urinary, genital and digestive tracts but that they stain dead or dying tissue deep and rapidly. This may explain the contradictory results of other workers. Besides, in making frozen or other sections, it is difficult to avoid the dissolving of the dye on the surface during this procedure, thus producing secondary staining of the dead tissue.

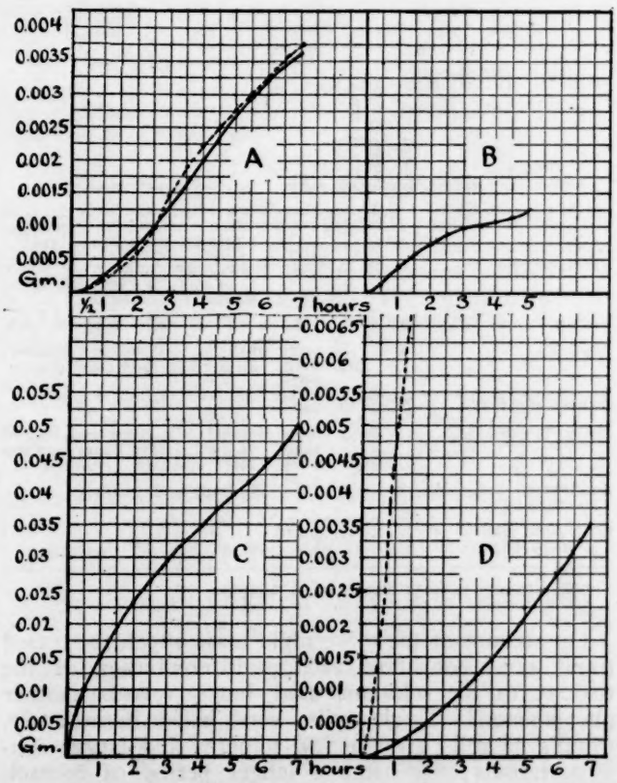
Diffusion of Mercurochrome Through Frog-Skin.—In order to obtain a conception of the rate of diffusion, in comparison with other drugs, the following experiments were performed:

The skin was stripped from the legs of frogs in the customary way, according to Sollmann,[38] attached to glass tubes of 0.75 cm. diameter, filled with 5 cc. of the solutions to be tested, and suspended in cylinders containing 150 cc. of Ringer solution (p_H 7.6). Care was taken that the level of the liquid inside and outside was the same, in order to avoid filtration pressure. The amount of the perfused dye was determined colorimetrically by adding enough of the original dye solution to 150 cc. of Ringer solution, in a cylinder of the same diameter, to match the color in the diffusion cylinder. In this way 2 per cent solutions of mercurochrome in aqueous and in acetone-alcohol-aqueous solution were compared with 2 per cent solutions of gentian violet in both solvents and with tincture of iodine and compound solution of iodine.

The accompanying chart illustrates these experiments. The rate of perfusion of both mercurochrome solutions is about the same (*A*). It is somewhat greater than with gentian violet (*B*), and considerably slower than with tincture of iodine (*C*), or compound solution of iodine. (It should be noticed that the iodine chart is based on a ten times larger unit.) It should also be mentioned that the rate of diffusion with mercurochrome is considerably slower when the diffusion is done in the opposite direction, namely, from the outside toward the inside, by using inversed sacs of skin. This has been observed by E. Wertheimer [39] for other dyes.

Diffusion experiments with compound solution of iodine and 2 per cent aqueous solutions of mercurochrome, short pieces of isolated rabbit intestine being used instead of frog skin, gave essentially similar results, as illustrated at *D*. It may also be noticed that with mercurochrome the diffusion is very slow in the beginning, and that it increases with the progressing deterioration of the skin. At lower temperatures the rate of diffusion remains exceedingly small for many hours. The great difference between the rate of diffusion between the two dyes and that of the solutions of iodine might be explained in part by the precipitant action of the latter on proteins, which would tend to alter the conditions of the membranes considerably.

Mercurochrome, gentian violet and iodine penetrate, therefore, the dead skin of the frog, and the dead rabbit intestine, although the absolute quantities are small, being with mercurochrome one five-hundredth after one hour and one fiftieth after four hours, of the total amount present in the inside of the membranes. For gentian violet, the corresponding values are one two hundred and fiftieth and one one-hundredth, and for iodine one twentieth for the tincture, and one fiftieth for compound solution of iodine, and one tenth and one fifth, respectively.



Diffusion through frog skin and rabbit intestine: *A*, frog skin: solid line, aqueous 2 per cent mercurochrome; broken line, acetone-alcoholic. *B*, frog skin: 2% gentian violet, aqueous. *C*, frog skin; U. S. P. tincture of iodine (scale reduced to one tenth). *D*, rabbit intestine; solid line, 2 per cent mercurochrome; broken line, compound solution of iodine, iodine 5 per cent, potassium iodide 10 per cent.

Toxicity of Mercurochrome for Living Tissue.—It has been claimed that the toxicity for living tissue is very low and that, according to Reddish, human spermatozoa survived the treatment with 2 per cent of mercurochrome in the ratio of one part of spermatic fluid and one part of mercurochrome solution for one-half hour; i. e., that they survived this period in a 1 per cent solution. These observations were made in a medium rich in proteins and it seemed, therefore, advisable to check this by other methods.

Effect of Mercurochrome on Ciliary Movements.—This was studied by observing the velocity of the ciliary movements of the ciliary cells of the frog pharynx after bringing them in contact with the solutions to be tested.

Two series of experiments were performed, one on small pieces of mucous membrane snipped from the

38. Sollmann, T.: J. Pharmacol. & Exper. Therap. **21**: 200, 1922.
39. Wertheimer, E.: Arch. f. d. ges. Physiol. **199**: 383 ff., 1923.

pharynx and one on scrapings. The larger pieces represent more nearly the conditions under which the antiseptics are applied in practice; the scrapings show the effect on the isolated cells or on small masses. The clipped tissue, because of the smaller surface exposed and the lesser injury, is much more resistant than the teased preparation. Table 2 shows that 2 per cent mercurochrome, 2 per cent eosin, 2 per cent methylene blue (methylthionine chloride, U. S. P.) affect the clipped tissue only very slightly. Gentian violet in 2 per cent solution is distinctly more toxic, and this holds true to a higher degree for acriflavine hydrochloride, and especially for compound solution of iodine, of which solutions containing 0.125 per cent of iodine kill the cells immediately when brought in contact.

TABLE 2.—*Effect of Dyes on the Ciliary Movements of the Frog Pharynx**

	Snipped Tissue				
Drug and Concentration	Slowed	Markedly Slowed	Very Markedly Slowed	Dead	Teased Tissue
Mercurochrome, 2%....	10	11	20	2 hrs.	single cells immediately dead, 25 cells or more in 5 minutes, larger lumps in 30 minutes
Mercurochrome, 5%....	4	6	13	22	single cells immediately dead, 25 or more in 4 minutes, larger lumps in 15 minutes
Mercurochrome, 10%...	6	9	13	18	most cells dead in 30 seconds
Eosin, 2%.....	4	..	1½ hrs.	more than 2 hrs.	small lumps slowed in 7 minutes; all dead in 10-28 minutes
Gentian violet, 2%.....	2	..	10	40	
Methylene blue, 2%....	..	70	..	more than 2 hrs.	isolated cells killed and stained at once; larger lumps survived for 7 minutes
Acriflavine, sat. sol. less than 2%	..	..	..	15	all dead in 2 minutes
Compound solution of iodine, 0.125 per cent	..	..	..	immed.	

* The figures indicate the time in minutes.

On account of the more rapid toxic effect, the teased tissue does not allow such a differentiation of the toxicity of the solutions used, but it reveals another phenomenon. Single cells were killed immediately, groups of cells after a few minutes and larger conglomerations only after a longer period of contact. Whereas the single cells were stained immediately, larger pieces were first stained on the edges and only considerably later in the center, although the dye had access to all parts of the tissue. From this it appears that only the injured or dead cells are stained and that the normal cells are not affected by the dye. This confirms the observations made with muscular and other tissues, in which only the necrotic or dead structures were stained. It was also noticed that the ciliary movements stopped as soon as the nuclei were stained, whereas diffuse staining of the protoplasma went parallel with the progressive slowing of the ciliary motility.

CONCLUSIONS

It appears that mercurochrome, when once fixed on the surface of the tissue, develops no bacteriostatic action in contact with bacterial cultures.

It penetrates only into the dead or dying mucous membranes of different organs, such as bladder, vagina and digestive tract, and it may diffuse through the cornea when in contact for a sufficient period.

It does not penetrate the living skin but is fixed in the most superficial layers of the epithelium, and it does not penetrate or stain normal muscular tissue.

It penetrates necrotic and dead tissue and stains them deeply and permanently.

The tissue toxicity of mercurochrome is relatively low, but the 5 per cent aqueous solution is distinctly injurious as judged by excised ciliated mucous membranes.

Mercurochrome cannot be relied upon to destroy bacteria that have penetrated into the living tissue of a wound or of the skin; it could do no more than disinfect the surface and the necrotic tissue. This limitation is shared more or less by all antiseptics so that no substance can be properly called a safe and certain wound antiseptic. No antiseptic takes the place of thorough cleansing and surgical treatment. When these are not practical, for "first aid" or for very superficial wounds, antiseptics are probably better than no treatment at all. The antiseptic efficiency of mercurochrome is not outstanding, and for skin disinfection the aqueous solution is distinctly inferior. The absence of irritation may be an advantage, especially with open wounds, and for prolonged treatment; but its limitations should always be borne in mind.

Committee on Foods

THE FOLLOWING PRODUCTS HAVE BEEN ACCEPTED BY THE COMMITTEE ON FOODS OF THE AMERICAN MEDICAL ASSOCIATION FOLLOWING ANY NECESSARY CORRECTIONS OF THE LABELS AND ADVERTISING TO CONFORM TO THE RULES AND REGULATIONS. THESE PRODUCTS ARE APPROVED FOR ADVERTISING IN THE PUBLICATIONS OF THE AMERICAN MEDICAL ASSOCIATION, AND FOR GENERAL PROMULGATION TO THE PUBLIC. THEY WILL BE INCLUDED IN THE BOOK OF ACCEPTED FOODS TO BE PUBLISHED BY THE AMERICAN MEDICAL ASSOCIATION.

RAYMOND HERTWIG, Secretary.

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Sponsors.—Institute of American Meat Packers, Chicago: an educational and research association of the meat packing industry established to further the welfare of the industry, to promote proper trade relations, to prosecute research on its products, and to promulgate advertising.

The following listed educational publications have been found acceptable as conforming to the Rules and Regulations with the exception of a few minor statements contained therein, which are being corrected in new revised editions. The institute agrees to maintain its future advertising and publications entirely correct and in compliance with the Committee's Rules and Regulations. The Institute of American Meat Packers is therefore entitled to display the seal of this committee on its publications and advertisements.

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The principal claims used by the association in promotion of meat follow:

1. Meat is an excellent source of high quality protein.

2. Lean meat, kidney, liver, heart and tongue are among the richest sources of food iron.

3. Lean meats are rich in phosphorus.

4. Lean meats supply most minerals required in nutrition in good quantity excepting calcium.

5. Lean meats are a good source of vitamin G (B_2).

6. The fat of beef animals is a good source of vitamin A, while oleo oil and oleomargarine made from it are rich in vitamin A and contain vitamin D.

7. While lean meats furnish modest quantities of calories, the fatter meats supply liberal amounts, and bacon and salt pork are among the richest food sources of calories.

8. Edible specialties, such as liver, kidney, heart and tongue, are good sources of vitamins A, B and G.

9. Meat is one of the most digestible of foods, its protein being almost entirely digestible.

10. The body fats of beef, pork and lamb, as well as prepared shortening such as lard or oleomargarine, are almost completely digestible (from 96 to 97 per cent).

RALSTON WHEAT CEREAL

Whole Wheat with Embryo added and only coarsest Bran removed

Manufacturer.—Ralston Purina Company, St. Louis.

Description.—Essentially whole wheat with coarsest bran removed and with added wheat embryo; contains more than twice as much embryo as whole wheat; in granular form.

Manufacture.—Dark hard winter wheat is cleaned by the usual screening, scouring, brushing and other milling operations, broken between steel reduction rolls, and passed over sieves of definite mesh to remove large bran flakes and fine flour; air currents effect the bran removal. Material of a definite granulation is selected for the product.

The wheat germ is passed over grinding rolls and appropriate screens to obtain a desired granulation, which is mixed with the prepared granular wheat. Before packing, the mixture is heated at 60 C. for about twenty minutes to destroy insect life. The final mixture is automatically packed in paper cartons.

Analysis (submitted by manufacturer).—

	per cent
Moisture	9.2
Ash	1.5
Fat (ether extract)	2.1
Protein (N × 5.7)	14.2
Crude fiber	1.2
Carbohydrates other than crude fiber (by difference)	71.8
Calcium (Ca)	0.04
Phosphorus (P)	0.37
Potassium (K)	0.35
Sodium (Na)	0.03
Magnesium (Mg)	0.27
Chlorine (Cl)	0.005
Iron (Fe)	0.006

Calories.—3.6 per gram; 102 per ounce.

Vitamins.—The vitamin B, G and E content is more than twice that of whole wheat, owing to the addition of extra wheat germ. The product is considered a good to rich source of B and E, and a fair to good source of G.

Claims of Manufacturer.—A quick cooking wheat cereal containing more embryo and less bran than whole wheat; valuable for its vitamin B and food iron content.

STEERO BOUILLON CUBES

Manufacturer.—American Kitchen Products Company, New York.

Description.—A mixture of concentrated meat extract, concentrated vegetable extract, salt and beef fat, flavored with celery seed and pimento and an extract of fresh celery, parsley and leeks; in cube form.

Manufacture.—The vegetable extract is prepared by digesting vegetables in dilute hydrochloric acid until the protein is hydrolyzed and rendered soluble in water. The acid is neutralized with sodium carbonate, and the solution is filtered and concentrated in glass lined vacuum stills to a semisolid mass.

The meat extract is prepared by cooking fresh beef flesh in water.

The meat and vegetable extracts are mixed and heated, salt is added, and the mass is concentrated at about 100 C. to a dough-like consistency. Rendered beef fat which has been heated with celery, parsley and leeks is added to the hot dough-like mass and the heating is continued for a short time. After cooling, the mass is rolled and cut into cubes. The cubes are wrapped in wax-paper lined tinfoil by machinery and packed in tin boxes.

Analysis (submitted by manufacturer).—

	per cent
Moisture	6.8
Ash	68.2
Sodium chloride	62.5
Salt (NaCl) free ash	5.7
Fat (ether extract)	1.6
Nitrogen	3.5
Nitrogenous substances estimated as protein (N × 6.25) (only a portion of nitrogenous substances exist as protein)	21.9
Sucrose and reducing sugars	0.0
Creatinine	1.4
Creatine	0.6
Phosphorus (P)	0.36

(Analysis of an average sample of meat extract used)

	per cent
Moisture	16.9
Ash	31.3
Sodium chloride	7.4
Acidity (as lactic acid)	13.1
Nitrogen	10.8
Creatinine	8.7
Phosphorus	1.48

Calories.—1.0 per gram; 28 per ounce.

Claims of Manufacturer.—The cubes are intended for flavoring a variety of dishes for the table and the preparation of bouillons, broths and soups.

PLEZOL TWIN BREAD

Manufacturer.—Frank Baker Bread Company, Lima, Ohio.

Description.—A white bread made by the sponge dough method (method described in THE JOURNAL, March 5, 1932, p. 817); prepared from patent flour, water, lard, dry skim milk, sucrose, salt, yeast, malt syrup and a yeast food containing calcium sulphate, ammonium chloride, sodium chloride and potassium bromate.

Analysis (submitted by manufacturer).—

	per cent
Moisture (entire loaf)	35.4
Ash	0.8
Fat	1.0
Protein (N × 6.25)	8.5
Crude fiber	0.3
Carbohydrates other than crude fiber (by difference)	54.0

Calories.—2.6 per gram; 74 per ounce.

Claims of Manufacturer.—A bread of good quality.

PORTOLA FRENCH STYLE SARDINES
(In Pure Olive Oil)

Manufacturer.—K. Hovden Company, Monterey, Calif.

Description.—Cooked immature sardines (Clupea caeruleus blue sardines) packed in olive oil.

Manufacture.—The fish are harvested as described for Portola Sardines (Pilchards) (THE JOURNAL, June 4, 1932, p. 1991) and immediately on landing are spread over tables, eviscerated, placed in a light brine for fifteen minutes to extract the blood, passed over a draper drier for sixty minutes and dried with hot air until the tails become brittle and the skin fairly dry, after which they are placed in thin layers in wire baskets and submerged in boiling cottonseed oil until thoroughly cooked. They are washed off with steam and fresh water to remove the oil, air cooled, and packed in olive oil in tins, which are processed under the control of the California State Board of Health as to temperature and time.

Analysis, Calories and Claims of Manufacturer.—See these sections for Portola Sardines (Pilchards).

LAFER BROS. GOLDEN TABLE SYRUP
(85 Per Cent Corn Syrup, 15 Per Cent Refiners' Syrup)

Packer.—D. B. Scully Syrup Company, Chicago.

Distributor.—Lafer Brothers, Detroit.

Description.—A table syrup; a corn syrup flavored with refiners' syrup.

Manufacture, Analysis, Calories, Claims of Manufacturer.—See these sections for Banner Blue Corn Syrup with Cane Flavor (THE JOURNAL, March 5, 1932, p. 817).

THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION

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SATURDAY, JULY 9, 1932

AN INTERPRETATION OF ANGINAL PAIN

Consideration of the clinical syndrome commonly described as angina pectoris must inevitably take into account the nature and primary location of the pain that is its most characteristic accompaniment. There have been numerous theories but, as a recent writer [1] has remarked, the striking diversity of these is sufficient proof of our inadequate knowledge of the subject. Often there are no demonstrable gross anatomic changes adequate to furnish an intelligible morbid anatomy of angina pectoris. It seems almost like an anomaly that a disorder ordinarily so easy of diagnosis should remain so perplexing in respect to the causes of the principal manifestations. In some quarters it has been held that anginal pain arises directly out of spasm of the coronary arteries in cardiac ischemia.[2] The more widely accepted view is that the pain is of muscular origin. It has been compared to the sensation of a muscle in a condition of severe cramp. In any event the problem of ischemia of the heart must be given some consideration, for it is known that pain can be brought about in various muscles when they are made to contract for some time during a diminished blood supply to them.

Spasm of the coronary vessels, intermittent claudication and anoxemia of the heart muscles have all been debated in relation to anginal pain. According to Keefer and Resnik,[3] a critical analysis of the theories that attribute angina pectoris to coronary spasm, to disease of the aorta or to myocardial exhaustion demonstrates that these views are open to such serious criticism that they become unacceptable; it can be shown, moreover, that anoxemia of the heart explains every characteristic of angina, including the likelihood of sudden death, which must be considered an integral feature of the condition. The percentage of instances in which conditions capable of producing anoxemia of the myocardium have been found in cases of undoubted angina is so high that the accuracy of the diagnosis in the few remaining instances seems open to question. Keefer and Resnik feel that an eclectic theory which admits a varied basis for angina should be abandoned. The angina pectoris of Heberden, they conclude, has but one cause, anoxemia of the myocardium.

Sir Thomas Lewis [4] of London has ventured to elucidate the debatable pain features by studying the analogous pain in ordinary muscular ischemia. The exercise used has been a simple gripping movement in the arm. The contractions are almost maximal, at the rate of one a second. The circulation is arrested during the exercise by means of a sphygmomanometer cuff, which is distended to a high pressure on the upper part of the arm. In an observation of this kind, pain begins from about twenty-five to forty-five seconds (or the same number of contractions) after the beginning of exercise; it develops progressively, increasing in intensity and rendering a continuation of exercise, still vigorously pursued, disagreeable or intolerable at about the seventieth second. The pain is continuous; it does not increase appreciably with the contraction of the muscle, and it does not subside with the relaxation. It is a smooth pain, gradually but constantly growing in intensity while exercise lasts. Thus, it is shown to be independent of the tension developed during the contraction of the muscle. The pain is not the result of cramp. The pain is determined by some chemical or physicochemical agency within the mass of muscle, for the factor underlying pain continues unchanged until the circulation is restored, whereupon it is promptly removed. In other words, in any contractile phenomena with the circulation free the change within the muscle fibers that ultimately underlies pain occurs, but pain does not develop, since the chemical factor cannot accumulate in the tissue spaces while these are under the influence of a free stream of blood.

According to Lewis's conclusions in his Billings Lecture at Chicago last fall, his observations [5] afford, for the first time, evidence for the belief that in ischemia pain arises from a working muscle and that the stimulus is derived from physiologic processes in the muscle fiber. Further, he states, if the characteristics of anginal pain and the various circumstances in which it arises and is influenced are closely considered in the light of these observations on somatic muscle, much that was previously obscure becomes plain to the understanding.

If, as Lewis postulates, anginal pain results from relative ischemia of the cardiac muscle, it may be provoked in distinct ways. Thus, it may be incited if the blood supply to the muscle becomes diminished, while the work done remains constant, or it may be

1. Cecil, R. L.: A Textbook of Medicine, ed. 2, Philadelphia, W. B. Saunders Company, 1930.
2. Gallavardin, L.: Les angines de poitrine, Paris, Masson et Cie, 1925, p. 126.
3. Keefer, C. S., and Resnik, W. H.: Angina Pectoris, a Syndrome Caused by Anoxemia of the Myocardium, Arch. Int. Med. **41**: 769 (June) 1928.
4. Lewis, Thomas: Pain in Muscular Ischemia, Arch. Int. Med. **49**: 713 (May) 1932.
5. Lewis, Thomas: Pain in Muscular Ischemia, Arch. Int. Med. **49**: 713 (May) 1932. More detailed information is given in Lewis, Thomas; Pickering, G. W., and Rothschild, P.: Heart **15**: 359 (July) 1931.

provoked if the blood supply fails to increase adequately to the needs of a muscle that is called on to increase its work. The pain attending coronary occlusion originates from muscular ischemia. Spasmodic anginal pain is not due to strain on a structure such as the aorta but rather to relative ischemia. If one accepts the idea that attacks of anginal pain are brought about by relative ischemia of the muscle, according to Lewis, the relief of pain by nitrites may clearly come through a decrease of expenditure of energy, through an increase of blood supply, or by the joint effects of these two.

VITAMIN DEFICIENCIES AND NERVOUS SYSTEM LESIONS

Since Eijkman [1] showed that noninflammatory atrophic degeneration of the medullary sheaths of peripheral nerves occurred in hens fed on a diet of polished rice, it has been known that dietary deficiencies cause lesions of the nervous system. The factor responsible for this particular morphologic change was shown by Woollard [2] and others to be produced by a deficiency of vitamin B. Recently it has been found that what has heretofore been called vitamin B is really a mixture of at least two components; namely, the heat-labile antineuritic factor and a thermostable substance, the absence of which is thought to produce pellagra. Stern and Findlay [3] studied the changes in the nervous system of rats fed diets deficient in vitamin B (antineuritic component) and G (pellagra-preventive factor), respectively. In the first group of animals, they found chromatolytic changes in the ganglion cells of the spinal cord and early degeneration of the myelin of the peripheral nerves. In the second group, the changes consisted of swelling and vacuolization of the anterior horn cells of the spinal cord with the deposition in them of lipochrome pigment. Recently Zimmerman and Burack [4] have reported extensive demyelination of the peripheral nerves of dogs on a diet deficient in vitamin B, but they found similar though less marked changes in dogs that were entirely deprived of food except for adequate vitamin B complex in the form of vitavose. In animals that were partially or wholly on a diet deficient in vitamin G there were present degenerative lesions in the vermis cerebelli, the restiform bodies, and the fasciculus gracilis of the spinal cord, as well as demyelination of the peripheral nerves. Degeneration of the myelin sheaths of the median dorsal columns were found by Winkelman [5] in a case of human pellagra, and both Pentschew [6] and Langworthy [7] reported disseminated foci of demyelination in the spinal cords of similar cases.

It has been held that deficiencies in the vitamin B complex alone were responsible for lesions of the nervous system, but in 1931 Pappenheimer and Goettsch [8] described softenings in the cerebellum in chicks which they attributed to a lack of vitamin E. These lesions were in every way identical with those described by Zimmerman and Burack in their dogs subsisting on a diet deficient in vitamin G. Mellanby,[9] too, has reported observations on puppies deprived of vitamin A which developed degenerative changes in the form of demyelination of the nerve fibers of the spinal cord similar to the lesions seen in subacute combined degeneration. Furthermore, Hess [10] described focal degeneration of the lumbar cord in a case of infantile scurvy complicated by rickets.

If it can be assumed that, in the experimental work, lesions in the nervous system are produced as the result of single rather than multiple vitamin deficiencies, it must be granted that a large variety of vitamins play a specific part in the production of these lesions. Or, at least, any one of them can play an important contributory part to some factor, as yet entirely unknown, which is activated by them and alone produces the lesions. Which of these factors is responsible for the changes observed must await solution by the experimental method. It is more than likely that little in the way of positive proof can be adduced from the human cases of deficiency diseases associated with changes in the nervous system, as they almost certainly represent multiple deficiencies.

BASAL METABOLISM AND PUBERTY

In a discussion of the energy requirements of children, a recent volume on nutrition [1] remarks that the energy requirements of the body probably are better understood than any of the other specific nutritive requirements. Because energy is an old story, and because rare instances have been discovered among human beings of nutritional failure resulting from restricted choice of foods even when the total quantity was plentiful, there has been a tendency in some quarters to regard calories as of no further importance. It requires only the stress of some major calamity such as war, flood or an economic emergency, however, to revive the realization that supplying enough to eat to a

1. Eijkman, Christiaan: Eine beriberiähnliche Krankheit der Hühner, Virchows Arch. f. path. Anat. **148**: 523, 1897.
2. Woollard, H. H.: The Nature of the Structural Changes in Nerve Endings in Starvation and in Beriberi, J. Anat. **61**: 283 (April) 1927.
3. Stern, R. O., and Findlay, G. M.: The Nervous System in Rats Fed on Diets Deficient in Vitamins B_1 and B_2, J. Path. & Bact. **32**: 63 (Jan.) 1929.
4. Zimmerman, H. M., and Burack, Ethel: Lesions of the Nervous System Resulting from Deficiency of the Vitamin B Complex, Arch. Path. **13**: 207 (Feb.) 1932.
5. Winkelman, N. W.: Beiträge zur Neurohistopathologie der Pellagra, Ztschr. f. d. ges. Neurol. u. Psychiat. **102**: 38, 1926.
6. Pentschew, A.: Ueber die Histopathologie des Zentralnervensystems bei der Psychosis pellagrosa, Ztschr. f. d. ges. Neurol. u. Psychiat. **118**: 17, 1928.
7. Langworthy, O. R.: Lesions of the Central Nervous System Characteristic of Pellagra, Brain **54**: 291 (Sept.) 1931.
8. Pappenheimer, A. M., and Goettsch, M.: A Cerebellar Disorder in Chicks, Apparently of Nutritional Origin, J. Exper. Med. **53**: 11 (Jan.) 1931.
9. Mellanby, Edward: The Experimental Production and Prevention of Degeneration in the Spinal Cord, Brain **54**: 247 (Sept.) 1931.
10. Hess, A. F.: Focal Degeneration of the Lumbar Cord in a Case of Infantile Scurvy, J. Infect. Dis. **23**: 438 (Nov.) 1918.
1. Growth and Development of the Child: Part III. Nutrition, White House Conference on Child Health and Protection. New York, Century Company, 1932.

population means a sufficiency of calories as well as that freedom of choice which is the everyday guaranty of quality (vitamins, minerals, amino-acids). Considerations of energy requirements start logically from a discussion of the basal metabolism, which has been defined as that level of metabolism which prevails when all modifying factors are producing their minimal effects. These factors, as usually stated, are food, work and temperature.

A controversy has arisen of late regarding the alleged influence of racial characters on the basal metabolism of adults. A recent writer [1] has remarked that the almost uncanny agreement found in applying the formulas of surface area to the basal metabolism of individuals of widely different body form, widely different proportions of body fat, and so on, have served to inhibit rather than stimulate interest in the effects of minor differences. These may be assumed to include the hereditary factors that affect body size and proportion, those which affect nervous organization, and those which produce a tendency to leanness or fatness, aside from the endocrine functions. There is more general agreement that adolescent children have a "distorted" energy requirement. Part of this is undoubtedly attributable to the unusual activity of growing children. Even for the basal metabolism, however, Du Bois,[2] who has devoted much attention to the subject, believes that there is a rise in basal metabolism before puberty with a subsequent fall; but the proof will come, he concludes, only when a number of individual boys and girls are studied every year, or, better, every six months between the ages of 10 and 16 years.

A contribution to the subject has lately been reported from the pediatric service of the Mount Sinai Hospital in New York by Topper and Mulier.[3] The basal metabolism of twenty-eight girls and ten boys from 10 to 16 years of age was studied at intervals of from six months to a year over a period of from one to four years. It was found that there was an increase in the basal metabolic rate in the prepubescent period, reaching its maximum around the time when the menses were established in girls and sexual maturity in boys, with a subsequent decline afterward. There was no uniformity in the height of the increased metabolism or in the duration of the increase. Some of these children had no other symptoms of an overacting thyroid gland. Others presented such symptoms as an enlarged thyroid gland, tremor, nervousness, vasomotor instability, cardiac murmur and tachycardia—all of which symptoms disappeared as the basal metabolic rate returned to the previous normal level, when puberty was well established.

Topper and Mulier believe that an increased basal metabolism is physiologic during pubescence. This increase coincides with the physiologic age rather than with the chronological age and occurs earlier in girls than in boys, coincident with their earlier pubescence. As there seems to be an individual variation in the height and duration of the increased metabolism, it makes the adoption of normal standards difficult for this important age period. The increased basal metabolism may be associated, according to the New York pediatricians, with symptoms simulating organic heart disease or, more especially, exophthalmic goiter. Therefore, they conclude, in evaluating high metabolic figures at this period, the clinical manifestations of pubescence have to be considered. Exophthalmic goiter is rare before puberty and should not be confused with the physiologic overactivity of the thyroid gland in pubescence, which is temporary and the prognosis of which is excellent.

2. Du Bois, E. F.: Basal Metabolism in Health and Disease, Philadelphia, Lea & Febiger, 1927, p. 147.
3. Topper, Anne, and Mulier, Hannah: Basal Metabolism of Normal Children, Am. J. Dis. Child. **43**: 327 (Feb.) 1932.

Current Comment

THE DILEMMA OF LISTERINE

When Congress, which on occasion has attempted to practice medicine, enters into any medical field it is likely to confuse the situation somewhat. Perhaps the good congressional doctors were not aware, when they were concerning themselves with budget balancing, of the difficulties they were conferring on some of America's leading industrial concerns; for example, the Lambert Pharmacal Company, concocters of Listerine. Not long ago THE JOURNAL reported the results of the study of this product made by the A. M. A. Chemical Laboratory and the Bureau of Investigation. As a result of this study the opinion was stated that the product cannot be considered in any sense of the word a real germicide and that the claims made for it were hardly justified by available evidence. Now, however, the manufacturer finds himself in a position where it is necessary for him to determine exactly what the product really is good for. Various preparations are taxed according to their uses. The product called Listerine is sold largely as a gargle for sore throats; used in this manner, it is a medicinal agent. Under the new revenue law, medicinal agents are free from tax. However, in order to combat the campaign put forth on behalf of Pepsodent Antiseptic by Amos and Andy, in recent days Listerine has also been widely advertised as a mouth wash. In fact, the technical term "halitosis" was rescued from the musty archives of medical dictionaries and made a byword—and a reproach—by the Listerine manufacturers before Pepsodent appeared on the scene. Mouth washes, under the new revenue law, are taxable at 5 per cent. Furthermore, it seems to have occurred to the agency which promotes Listerine that it has usefulness—at least from the advertising point of view—as an after-shaving lotion and that its virtues for the control of dandruff are extraordinary. By such usage the product becomes a cosmetic or toilet article. The toilet goods tax is 10 per cent. What a dilemma! If the

Treasury Department asserts that Listerine is a toilet article, it will have to pay 10 per cent; if it is a mouth wash, it will have to pay 5 per cent, and if it is a medicinal agent, it can get off without a tax. We can assure the Treasury Department, as a result of the investigation carried on by the Chemical Laboratory of the American Medical Association, that as a medicinal agent it is not potent enough to be considered seriously. Whether it pays 5 per cent or 10 per cent is for the authorities to decide, but if it really is to be helpful—although somewhat indirectly—to the people who buy it, the bigger the tax the better!

Association News

TIME OF MILWAUKEE SESSION

The Eighty-Fourth Annual Session of the American Medical Association will be held in Milwaukee, June 12 to 16, 1933.

MEDICAL BROADCAST FOR THE WEEK

American Medical Association Health Talks

The American Medical Association broadcasts on Monday and Wednesday from 10:45 to 10:50 a. m. over Station WBBM (770 kilocycles, or 389.4 meters). The Columbia chain program has been discontinued for the present.

The subjects for the week are as follows:

July 11. Food and Food Advertising.
July 13. Your Heart.

There is also a fifteen minute talk sponsored by the Association on Saturday morning from 10:45 to 11 over Station WBBM.

The subject for the week is as follows:

July 16. Rheumatism.

This schedule is based on Chicago Daylight Saving Time, one hour faster than Central Standard Time.

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST: SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION, PUBLIC HEALTH, ETC.)

CALIFORNIA

Society News.—A symposium on syphilis constituted the program of the Alameda County Medical Society, June 20; the speakers were Drs. Harry J. Templeton, Gertrude Moore, Charles B. Fowler, Oakland, Clifford W. Mack, Livermore, and Archie A. Alexander, Oakland.

Quarantine on Mussels.—Persons who go to beaches along the northern California coast are warned not to eat mussels because of the danger of contracting mussel poisoning, states a recent bulletin of the state department of health. The department prohibits the sale or offering for sale of mussels gathered within the coast area from Monterey County to the Klamath River in Del Norte County during the period May 16-September 30. Examinations of mussels are made at stated intervals throughout the year. It has been determined that these shellfish lose most of their toxicity during the winter months. In the spring they become more toxic, reaching a maximum state of toxicity about the middle of July and gradually becoming less toxic until late fall. The bulletin of the department states that the poisonous qualities are higher at the present time than they are ordinarily at this season of the year. In 1927, there were 102 cases of mussel poisoning with six deaths reported; in 1929, fifty-five cases with four deaths; in 1930, one case, and in 1931, two cases.

CONNECTICUT

Personal.—Lafayette B. Mendel, Ph.D., Sterling professor of physiological chemistry, Yale University School of Medicine, New Haven, received the honorary degree of doctor of laws from Western Reserve University at its recent commencement. ——Dr. Winthrop M. Phelps has been appointed professor of orthopedics at Yale University School of Medicine, New Haven.

DISTRICT OF COLUMBIA

Personal.—Dr. Daniel L. Borden was elected president of the alumni association of George Washington University, June 11. Dr. Frederick A. Reuter was elected a vice president of the association, representing the school of medicine.——Dr. John W. Wilce, former football coach at Ohio State University, has been appointed a medical examiner for the aeronautics branch of the U. S. Department of Commerce.

Cancer Hospital for Women.—Construction of Washington's first hospital for the treatment and care of women with cancer will be started soon on the grounds of Garfield Memorial Hospital with funds provided under the will of R. T. Warwick, the Washington *Star* reports. More than $300,000 was bequeathed in the will, to be administered by the Washington Home for Foundlings. An agreement has been reached between the trustees of the home and the hospital, whereby the cancer institution will occupy a portion of the grounds of Garfield Hospital and have available for its use much of the hospital equipment. It was said that a considerable amount of the money will be spent in acquiring equipment necessary for the treatment of cancer alone. Efforts will be made later, it was said, to extend the facilities of the new hospital by seeking additional funds in order that it may be enlarged and better equipped.

ILLINOIS

Chicago

Personal.—Dr. Chauncey C. Maher has been appointed assistant professor of medicine at Northwestern University Medical School, effective June 1.——Dr. Cyrille Vermeren, Belgian consul since 1915, has been awarded the Cross of Officer of the Order of Leopold and promoted to the rank of consul-general, the newspapers recently announced. Dr. Vermeren was a practicing physician in Chicago for years.

Examination of School Children Abandoned.—With the failure of the city to renew the appropriation for twenty-five school physicians and nurses, the physical examinations of school children have been discontinued, newspapers report. The Municipal Tuberculosis Sanitarium has been paying these physicians for this work. The newspapers further reported that the health department, while maintaining a few physicians to handle contagion in the schools, has not conducted physical examinations among the school children for the last fifteen years.

The New Provident Hospital.—Simple ceremonies marked the laying of the corner-stone of the new home of the Provident Hospital, June 14, which is the building formerly occupied by Chicago Lying-In Hospital, now being remodeled. In a cooperative program between the hospital and the University of Chicago, it is planned to develop this institution into a medical education center for Negroes. This program includes the care of the sick, clinical instruction for medical students, an increase in the number of internships for Negro physicians, graduate medical training, opportunities for Negro students for teaching and research. In 1930 a fund of $3,000,000 was subscribed for the development of this center. Provident Hospital, now at 16 West Thirty-Sixth Street, was founded in 1890 and has since been an important center for medical work among Negroes of the community. Rear Admiral Norman J. Blackwood, medical corps, U. S. Navy, retired, has been appointed medical director.

INDIANA

Personal.—A bronze tablet was unveiled, May 31, by members of the Methodist Hospital Staff Society, Indianapolis, in memory of Dr. Charles L. Cabalzer.——Dr. Jesse E. Nixon, Portland, has been appointed health officer of Jay County, succeeding Dr. William H. Walker, Portland.——Dr. Frank C. Walker has been promoted to professor of diseases of women and head of the department of gynecology in Indiana University School of Medicine, Indianapolis, it is reported.

Dr. Waters Honored.—Dr. Samuel C. Waters, Middletown, was presented with a life membership in the Henry County Medical Society, June 15, at a dinner given by the society in his honor. Dr. Edgar S. Ferris, Newcastle, presided as toastmaster. Speakers included Drs. Hugh A. Cowing, Muncie, and Clifford E. Canaday, Newcastle, Frank W. Cregor and

Homer H. Wheeler, Indianapolis, and Mr. Thomas A. Hendricks, secretary of the state medical society. Dr. Waters has practiced medicine for more than fifty years. As THE JOURNAL goes to press, an account is received of the sudden death of Dr. Waters in his office, June 22.

Society News.—Dr. Millard F. Arbuckle, St. Louis, addressed the Vanderburgh County Medical Society, June 14, on "Extraction of Foreign Bodies from the Lungs."——The Whitley County Medical Society was addressed, June 14, by Dr. Ralph W. Elston, Fort Wayne, on "Surgical Diseases of the Abdomen of Children."——Dr. Robert M. Moore, Indianapolis, addressed the Carroll County Medical Society in Bringhurst, June 10, on congestion of the heart and angina pectoris. ——At the May 13 meeting of the Hancock County Medical Society, Dr. Matthew Winters, Indianapolis, spoke on pediatrics.——The Gibson County Medical Society heard a paper on "Gastro-Intestinal Infection in Children" in Princeton, June 13, by Dr. Paul R. Boren, Poseyville.

IOWA

Conference on Child Development.—The sixth annual Iowa State Conference on Child Development and Parent Education was held at Iowa City, June 21-23. Cooperating with the Iowa State Council for Child Study and Parent Education were the Iowa Child Welfare Research Station, the Extension Divisions of Iowa State College and the State University of Iowa and the state teachers' college. Topics discussed included "Child Health and Protection in the State of Iowa," Dr. Fred Moore, Des Moines, and "Mental Hygiene in the Community and State; Mental Hygiene and the Individual Child," Dr. George K. Pratt, New York.

Dr. Evans Honored.—The Webster County Medical Society gave a dinner, April 28, in honor of Dr. Robert Evans, who has practiced for forty years in Fort Dodge, and who, on the forty-fifth anniversary of his graduation in medicine, announced his retirement from practice. Dr. Sumner B. Chase presided as toastmaster at the program which followed the dinner. Dr. William W. Bowen, president, Iowa State Medical Society, with whom Dr. Evans has been associated in practice for many years, reviewed the more noteworthy incidents of their partnership. Other speakers were Drs. Philip B. McLaughlin, Sioux City; Michael J. Kenefick, Algona; Prince E. Sawyer and William Jepson, Sioux City; Channing G. Smith, Granger, retiring president of the state medical society; Edward L. Rohlf, Waterloo, and Howard D. Gray, Des Moines.

Illness Among Button Workers.—Five cases of a condition diagnosed as yellow atrophy of the liver recently occurred at Fort Madison among the personnel of a button factory, with three fatalities. A meeting of physicians disclosed, however, that a total of sixteen cases had been reported since November, 1928, with five deaths. All the cases had occurred in men employed in the button factory during the winter months. The work at the plant involved consists solely of sawing blanks from oysters and clam shells, which are shipped elsewhere to be finished into buttons. The shells are obtained from Texas, Mexico and Illinois. At a meeting of the Fort Madison City Medical Society, it was generally agreed that in view of the absence of any tangible evidence of metallic poisoning, the disease must be considered of an infectious nature. Arrangements have been made for prompt removal to the hospital of the State University of Iowa if another case should develop.

Society News.—A symposium on anesthesia was held at the meeting of the Des Moines Academy of Medicine and the Polk County Medical Society, May 31; the speakers were Drs. John Connell, E. Parish Lovejoy and John Russell.——Dr. Arthur Steindler, Iowa City, addressed the Scott County Medical Society, May 11, on "Periarthritis of the Shoulder."——Dr. Edward J. Stieglitz, Chicago, addressed the eighteenth annual meeting of the Iowa Medical Directors Association on "Prognosis in Hypertension," May 26, in Des Moines. This association is composed of medical directors of all old line life insurance companies in Iowa. Dr. Loren K. Meredith was elected president.——At a recent meeting of the Cass County Medical Society, the speakers were Drs. Reu L. Barnett and Harvey A. Johnson, Atlantic, on Raynaud's disease and thromboangiitis obliterans, respectively.——A symposium on neurosyphilis was presented before the Fayette County Medical Society at Fayette, May 10, by Drs. Robert A. Stewart and George Boody, Independence.——Dr. Emma M. Ackerman, Sioux City, was recently elected president of the Iowa Society for Medical Women.——Dr. Ira N. Crow, Fairfield, was elected president of the Des Moines Valley Medical Association at its recent annual session, and Dr. Edward B. Hoeven, Ottumwa, was reelected secretary.

KENTUCKY

Cancer Death Rate Decreases.—For the first time since 1925 the cancer death rate in Kentucky shows a decrease, according to statistics published by the state board of health. The rate for 1931 was 59.8, compared with 71.2 in 1930. The total death rate for the state was 11 per thousand of population, said to be the lowest except one during the past ten years. Heart disease was the principal cause of death, though there were 223 fewer deaths from that cause in 1931 than in the previous year. The infant mortality rate rose from 66.5 to 68.6, but the increase was attributed to a drop in birth registration, as there were only 24 more deaths. The birth rate recorded was 21.8 per thousand.

LOUISIANA

District Society Organized.—Physicians of the second congressional district, exclusive of Orleans Parish, formed the District Medical Society at a meeting, June 5, in Hahnville. The parishes included in the district are St. Charles, St. James, St. John and Jefferson. Officers elected are Drs. Joseph S. Kopfler, Kenner, president; Louis T. Donaldson, Hahnville, vice president, and Lionel O. Waguespack, Vacherie, secretary. Assisting in the organization of the society were Drs. Leon J. Menville, New Orleans, president, state board of medical examiners, and Paul T. Talbot, New Orleans, secretary, state medical society, both of whom made addresses.

Society News.—Speakers before the Fifth District Medical Society in Monroe, June 14, included Drs. James B. Vaughan, on "Present Economic Situation as It Affects the Medical Profession," and Melville W. Hunter, on "Differential Diagnosis of Early Pulmonary Tuberculosis."——The Seventh District Medical Society was addressed at Lake Charles, June 16, by Dr. Oscar W. Bethea, New Orleans, on angina pectoris. ——At a scientific meeting of the Orleans Parish Medical Society, June 13, speakers included Dr. Sidney M. Copeland on hypertension; Sidney L. Tiblier, D.D.S., "Modern Conceptions of Diagnosis of Oral Pathology," and Dr. Leon J. Menville, "Radiation Therapy of Toxic Goiter."——Dr. Charles A. Bahn, New Orleans, was elected president of the Louisiana Society for the Prevention of Blindness at its recent annual meeting.

MAINE

Society News.—Dr. Herman C. Pitts, Providence, R. I., addressed the Cumberland County Medical Society recently on "Uterine Cancer."——Speakers before the Kennebec County Medical Association at Winthrop, June 2, were Drs. William J. O'Connor, Augusta, and Adam P. Leighton, Jr., Portland, on gastric ulcer and gynecology, respectively.——The Washington County Medical Society was addressed in Eastport, May 26, by Drs. Conrad Wesselhoeft, Boston, on "Acute Anterior Poliomyelitis."——The York County Medical Society was addressed, June 8, in Saco, by Drs. Earl S. Hall, Portland, and Varaztad H. Kazanjian, Boston, on "Newer Aspects and Changes in Treatment of Fractures" and "Oral Surgery," respectively.

MARYLAND

Personal.—Yale University recently conferred the degree of doctor of literature on Dr. Fielding Hudson Garrison, librarian of the William H. Welch Library, Johns Hopkins University School of Medicine, Baltimore.

Case of Leprosy.—A case of leprosy was recently reported to the Baltimore health department. The patient, a woman, in the northeastern section of Baltimore, has been isolated at Sydenham Hospital pending her transfer to a leper colony by the U. S. Public Health Service. She has been living in Baltimore for a number of years.

Special Public Health District.—Creation of a special public health district in Baltimore for the training of public health workers has been made possible by a recent grant of about $25,000 for two or more years from the Rockefeller Foundation, through the School of Hygiene and Public Health of Johns Hopkins University, Baltimore. The only change in the existing methods of health work in the district, which will comprise the sixth and seventh wards in eastern Baltimore, will be the appointment of a full time physician as director of a branch of the city health department. The director will supervise the health needs of the district and lecture on public health work to students in the school of hygiene. The interest of Johns Hopkins University in the district will be chiefly in the facilities it will afford to the school of hygiene and public health for practical instruction of students and for investigations in the field of public health.

MASSACHUSETTS

Personal.—The degree of honorary doctor of medicine has been conferred by the University of Amsterdam on Dr. Harvey Cushing, until recently Moseley professor of surgery, Harvard University Medical School, Boston. Dr. Cushing recently received the honorary degree of doctor of science from Northwestern University, Chicago.——The University of Würzburg conferred the degree of doctor of medicine honoris causa on Francis G. Benedict, Ph.D., Boston, director of the Nutrition Laboratory of the Carnegie Institution, May 2.

Testimonial Dinner.—In recognition of the services of four senior members of the faculty of Boston University School of Medicine and the staff of Massachusetts Memorial Hospitals, more than 100 of their colleagues gathered at a dinner in their honor in the University Club, Boston, June 22. The physicians honored were Drs. Joseph Emmons Briggs, professor of surgery; Alonzo G. Howard, professor of orthopedic surgery; Wesley T. Lee, professor of dermatology, and Clarence H. Dobson, assistant in medicine. Dr. Briggs has been connected with the university since his graduation at the institution in 1890. Dr. Howard was graduated from the university in 1895, and Dr. Lee in 1898, and both men became associated with the school immediately after graduation. Dr. Dobson graduated from Hahnemann Medical College, Philadelphia, in 1897, and has been at Boston University School of Medicine since 1921. Dr. Henry M. Pollock, superintendent, Massachusetts Memorial Hospitals, was toastmaster at the dinner. Speakers included Henry S. Grew, president of the board of trustees of the hospitals; E. Ray Speare, treasurer of the university trustees; Dr. Alexander S. Begg, dean of the medical school; Dr. Edward S. Calderwood, physician-in-chief of the hospitals, and Dr. Charles T. Howard, surgeon-in-chief.

NEBRASKA

Fifty Years in Practice.—Dr. John Prentiss Lord, Omaha, and Dr. Harry Hapeman, Minden, are celebrating this year the completion of fifty years of medical practice. Both were born in Illinois, both attended Rush Medical College, Chicago, from which they were graduated in 1882, and they have remained lifelong friends, according to the *Nebraska State Medical Journal*. Dr. Hapeman came to Nebraska in 1884 and Dr. Lord in 1886. Dr. Lord has been professor of orthopedic surgery at Nebraska University College of Medicine since 1913. Before assuming that position, he was professor of surgery at Creighton University School of Medicine for twenty years. He has been president of the Nebraska State Medical Association (1910-1911) and was chairman of the Section on Orthopedic Surgery of the American Medical Association in 1927.

NEW JERSEY

Personal.—Dr. Theobald Smith, Princeton, director emeritus of the department of animal pathology, Rockefeller Institute for Medical Research, received the honorary degree of doctor of veterinary medicine from the University of Giessen at the hundredth anniversary of the granting of veterinary degrees.

Measures to Curb Rabies Adopted.—The state department of health recently adopted a resolution requiring local boards of health to report once a week the occurrence of cases of rabies in dogs. Because of an unusual prevalence in Essex County, the department called on the local authorities there to invoke emergency measures. Dr. Jesse Lynn Mahaffey, state director of health, urged the local boards of health to enforce the regulations requiring dogs suspected of having rabies to be killed or confined for at least six months. Other laws invoked require the reporting of dog bites and the confining of animals that have attacked or bitten any person, the licensing of dogs, and the elimination of unlicensed dogs. In addition, Dr. Mahaffey suggested that dogs, when not restrained to their owners' premises or in leash, be muzzled and, finally, that the public be advised of the prevalence of the disease among dogs and urged to cooperate in its control.

NEW YORK

Society News.—Dr. Chevalier Jackson, Philadelphia, addressed physicians of northern New York and those who are attending the Trudeau School for Tuberculosis at a meeting, June 3, at the National Variety Artists' Sanatorium, Saranac Lake.——Dr. Royd Ray Sayers, Washington, D. C., addressed the Medical Society of the County of Monroe, Rochester, May 17, on "Physical Examinations of Workers Engaged in Hazardous Occupations."

Art Exhibit.—A collection of water colors, bas-reliefs, masks and modeled figures by Dr. Konrad E. Birkhaug, associate professor of bacteriology, University of Rochester School of Medicine, has recently been shown at the Art Center in Rochester. The water colors depicted scenes in many parts of North America and Europe. Dr. Birkhaug has recently left for Europe to spend a year studying at the Pasteur Institute in Paris and he expects to spend some time in the study of art as well.

Annual Health Conference.—The annual conference of health officers and public health nurses of the state was held in Saratoga Springs, June 28-30. The following speakers appeared on the program, among others:

Dr. Frederick F. Russell, New York, "Evolution and Trends of Health Organization."
Dr. Walter T. Harrison of the U. S. Public Health Service, "Toxoid and Its Advantages Over Toxin-Antitoxin."
Dr. Albert VanderVeer, New York, "Hay Fever as a Public Health Problem."
Dr. Herman G. Weiskotten, Syracuse, "Developments in Education in Preventive Medicine and Public Health."
Dr. Frank W. Laidlaw, Middletown, "Studies on the 1931 Poliomyelitis Outbreak: A Preliminary Report."

New York City

Hospital News.—A marine roof was opened, May 26, on the new wing of the New York Polyclinic Medical School and Hospital, not at the New York Postgraduate Medical School and Hospital, as mentioned in THE JOURNAL, June 25.

OHIO

Society News.—William J. Burns, executive secretary, Wayne County Medical Society, Detroit, addressed the annual meeting of the Medical Bureau of Akron, June 14, on medical economics.——Roentgen-ray equipment is being installed at the health center operated by the health department of Cincinnati as the result of a gift of $10,000 from Charles F. Williams, president of the Western and Southern Life Insurance Company, Cincinnati. Dr. Henry Kennon Dunham will have charge of the interpretation of films. The department expects to use the equipment especially in the campaign against tuberculosis.

OKLAHOMA

Graduate Course.—Physicians of eastern Oklahoma are attending a special course dealing with degenerative diseases during the four weeks from June 13 to July 15. Meetings are held once each week in a circuit of six cities. Among the instructors are Drs. Isaac I. Lemann, New Orleans; Elsworth S. Smith, St. Louis; Joseph T. Martin, Arthur W. White, Harry Wilkins, Thomas C. Lowry and Arthur B. Chase, all of Oklahoma City, and James B. McElroy, Memphis.

OREGON

Licenses Restored and Revoked.—The license of Dr. Wilber H. Thompson, Elgin, which was revoked Nov. 20, 1931, for violation of the narcotic law, was restored, May 31, on his promise to abstain from the private use of narcotics. The license of Dr. Joseph A. Wonderlick, La Grande, revoked Nov. 19, 1931, for alleged abortion, was restored, May 31. The state board of medical examiners also reports that the license of Dr. Norman C. Hampton, Portland, was revoked, May 31, for unprofessional conduct.

Society News.—Dr. Milton Earl Wilson, Coquille, addressed the Coos County Medical Society, Marshfield, in May, on poisonous plants.——The Portland Pediatric Society was organized in March.——Drs. William K. Livingston, Portland, and Frank K. Power, Salem, addressed the Polk-Yamhill-Marion Counties Medical Society, McMinnville, May 3, on "Buerger's Disease" and "Retention in the Urinary Bladder," respectively.——Dr. Martin S. Sichel addressed the Portland City and County Medical Society, May 4, on trichomonas vaginalis.

PENNSYLVANIA

Symposium on Dental Caries.—A symposium on the cause and nature of tooth decay was held at the Frick Training School, Pittsburgh, June 23, under the auspices of the Pittsburgh section of the International Association for Dental Research. H. Edmund Friesell, D.D.S., dean, University of Pittsburgh School of Dentistry, and John J. Enright, Ph.D., of Mellon Institute for Industrial Research, presented the results of a nine-year study of tooth decay. The following speakers discussed these contributions: William J. Gies, Ph.D., Columbia University, New York; Dr. Edward H. Hatton, Northwestern University, Chicago; Russell W. Bunting, D.D.Sc., University of Michigan, Ann Arbor; Major Fernando E. Rodriguez, U. S. Army Dental Corps, and Theodor Rosebury, D.D.S., Columbia University, New York.

Philadelphia

Honorary Degrees.—At the commencement ceremonies of the University of Pennsylvania, June 22, the honorary degree of doctor of medicine was conferred on Alfred Newton Richards, Ph.D., professor of pharmacology in the school of medicine. Dr. William Pepper, dean of the school of medicine, and Dr. Barton Cooke Hirst, emeritus professor of obstetrics, received the honorary degree of doctor of science, as did Harlow Shapley, Ph.D., director of the Harvard Observatory, Cambridge, Mass., who delivered the commencement address.

Personal.—The honorary degree of doctor of science was conferred on Dr. Ross V. Patterson, dean of Jefferson Medical College, by Colgate University, Hamilton, N. Y., June 13.——Dr. Willard H. Kinney has been elected president of the Philadelphia Urological Association.——The intern prize of $100 offered by the medical board of the Philadelphia General Hospital has been awarded to Dr. John K. Caldwell for a paper entitled "The Correlation of the Van Den Bergh Reaction and the Icterus Index Test."——Dr. Theodore H. Mendell, resident physician at Mount Sinai Hospital, has been awarded the fellowship offered by the hospital association for graduate study abroad.

TEXAS

State Board Warns Against Impostors.—The Texas State Board of Medical Examiners has sent to chambers of commerce throughout the state a letter asking the cooperation of these organizations in warning the public against medical fakers. The letter urges that any stranger who treats or offers to treat a human being for a disease or disorder, mental or physical, and charge therefor, be required to show the annual registration permit issued by the board or to prove that he has a license on record in the office of the district clerk in the county in which he proposes to practice.

WASHINGTON

Society News.—Drs. Dorrell G. Dickerson and Adolf J. Drtina, Seattle, addressed the Thurston-Mason Medical Society at Shelton in May on "Relief of Headaches" and "Common Afflictions of the Heart and Their Treatment," respectively.——The Yakima County Medical Bureau has recently been organized with Dr. William K. Cocklin as president. The bureau will handle questions arising in industrial practice, such as signing contracts with industrial plants. Under its system, laborers will be able to select their own physicians from the membership of the bureau.

WEST VIRGINIA

Filipino Presents Forged Diploma.—Forged credentials were said to have been used by Joseph del Rosario y Danque, New York, formerly of Manila, to obtain permission to take the West Virginia examinations for license to practice medicine in July and again in November, 1931, according to information received from the University of Santo Tomas, Manila, from which he claimed graduation. He presented a diploma from the Manila university and because the time before the examination was too short in which to obtain verification from the authorities there he was admitted on condition that the necessary documents would be forthcoming. He failed, however, on both examinations. Later correspondence between the Council on Medical Education and Hospitals of the American Medical Association and the University of Santo Tomas revealed that del Rosario attended the school only three years, having left in 1927. The diploma, which the university secretary declares is forged, states that he was graduated, April 10, 1928.

GENERAL

Delegates to Tuberculosis Conference.—Official delegates designated by the United States government to take part in the eighth conference of the International Union Against Tuberculosis in Amsterdam in September are Drs. William Charles White, Washington, D. C.; Kendall Emerson and S. Adolphus Knopf, New York; Stephen J. Maher, New Haven, Conn.; Eugene L. Opie, Philadelphia; Stuart Pritchard, Battle Creek, Mich.; Willard B. Soper, West Haven, Conn., and Hugh de Valin of the U. S. Public Health Service.

Study of Air Conditions.—Basic data on the condition of the air in the average American city as to the presence of soot, ash, sulphur, lead, iron and carbon monoxide is to be obtained through a study recently initiated by the U. S. Public Health Service. It will be extended over two years in Washington, Baltimore, Philadelphia, New York, Boston, Buffalo, Cleveland, Detroit, Chicago, Pittsburgh, St. Louis, San Francisco, Los Angeles and New Orleans. It is expected that the field part of the study will be completed sometime during 1933.

Board of Otolaryngology Emphasizes Standards.—The five societies whose representatives make up the American Board of Otolaryngology have approved at their respective annual sessions for 1932 a resolution commending the work of the board and requesting state boards of medical examiners to keep in mind its standards when formulating any regulation or classification of physicians claiming to be specialists in this field. The resolution points out that standards for the practice of the specialty have been distinctly elevated and graduate instruction in the United States and Canada has been improved as a result of the voluntary appearance before the board of candidates for certification. Numerous regional special societies, hospital staffs and medical school faculties have prescribed the board's certificates as prerequisites to membership. The societies which cooperate in this work are the American Laryngological Association, American Otological Association, American Laryngological, Rhinological and Otological Society, American Academy of Ophthalmology and Otolaryngology and the Section on Laryngology, Otology and Rhinology of the American Medical Association.

Prevalence of Cerebrospinal Meningitis.—Following the epidemic outbreaks of cerebrospinal meningitis during the years of the World War, the incidence of the disease decreased for several years, but a decided upward trend has been observed since 1922, according to a study made by the health section of the League of Nations. The highest point was reached in 1929 in the countries of south central Europe but not until 1931 in England, Scotland and the Netherlands. In England, the number of cases increased from 666 in 1930 to 2,160 in 1931 and in the first quarter of 1932, 733 cases were reported. In the United States the maximum was reached in 1929, when more than 10,000 cases were reported. The decrease is evident in a comparison between the number of cases reported in January and February, 1932 (320 and 335, respectively), and the figures for the same months of 1931 (595 and 588, respectively). The disease has increased steadily since 1923 in Russia, though part of this increase is attributed to improved reporting. A serious epidemic has recently been reported from lower Egypt, beginning in November, 1931, and reaching as high as 637 cases per week in March. Meningitis has been endemic in the large ports of the Far East for some years with sporadic epidemics. Shanghai had an outbreak of 1,187 cases, with 403 deaths in 1929, and severe outbreaks have occurred this year in Hong-Kong and Macao.

Society News.—The Society for Experimental Biology and Medicine at its recent annual meeting elected the following officers: president, Dr. Alphonse R. Dochez, New York; vice president, Dr. Eugene L. Opie, Philadelphia, and secretary, Abraham J. Goldforb, Ph.D., New York.——At the annual meeting of the American Gynecological Society, Quebec, June 1, Dr. Floyd E. Keene, Philadelphia, was elected president; Dr. William B. Hendry, Toronto, vice president; Dr. George W. Kosmak, New York, treasurer, and Dr. Otto H. Schwarz, St. Louis, secretary.——Dr. James V. May, Boston, was elected president of the American Psychiatric Association at its meeting in Philadelphia, June 3, and Dr. Clarence O. Cheney, New York, secretary.——The American Urological Association at its annual meeting in Toronto, June 1, elected the following officers: Drs. Nathaniel P. Rathbun, Brooklyn, president-elect; George R. Livermore, Memphis, president, and Gilbert J. Thomas, Minneapolis, secretary.——The American Society for Cancer Research has recently elected officers as follows: Drs. Edward B. Krumbhaar, Philadelphia, president; Ward J. MacNeal, New York, vice president, and William H. Woglom, New York, secretary.——The annual meeting of the American Occupational Therapy Association will be held in Detroit, September 13-15.——Dr. John H. Peck, Des Moines, Iowa, was elected president of the National Tuberculosis Association at the annual meeting in Denver, June 8. Vice presidents are Drs. Lewis J. Moorman, Oklahoma City, and Harry L. Barnes, Wallum Lake, R. I.; secretary, Dr. Charles J. Hatfield, Philadelphia, and treasurer, Henry B. Platt, New York.——The Southern Interurban Gynecological and Obstetrical Society held its second annual meeting in New Orleans, May 7. The following officers were elected: Dr. John W. Turner, Atlanta, president; William T. Pride, Memphis, vice president, and Percy H. Wood, Memphis, secretary. Among the speakers were Drs. Walter T. Dannreuther, New York, on "The Use of Radium in Gynecology in Other Conditions Than Cancer," and C. Jeff Miller, New Orleans, "Conservative Management of Pelvic Infections."

FOREIGN

Trachoma Prize Awarded.—Dr. Ugo Lumbroso, Tunis, and Dr. J. Taboriski, Palestine, have been awarded the International Trachoma Prize of 2,000 Swiss francs, offered by the royal Hungarian minister of public welfare and labor (THE JOURNAL, April 11, 1931, p. 1243) for an essay on the etiology of trachoma. Honorable mention was given to Dr. Cattaneo, Sassari; Dr. P. Olitsky, New York; Rotth and Kanyo, Budapest, and C. Trapezontzewa, Moscow, it was reported.

Courses in Berlin.—Graduate courses in medicine arranged for the autumn by the Lecturers Association and the Kaiserin Friedrich-Haus of Berlin in association with the faculty of the University of Berlin include the following: internal medicine, October 17-29; tuberculosis, October 10-15; general medicine, October 10-15; urology, September 26-October 1; medical psychology and psychotherapy, October 17-22; intrathoracic diseases, October 17-21. Information may be had from Kaiserin Friedrich-Haus, Berlin N.W. 7, Robert Koch-Platz 2-4.

British Prize Competition.—The Sir Charles Hastings Clinical Prize, which consists of a certificate and a money prize of 50 guineas, is again offered to members of the British Medical Association for essays on personal observations and experiences collected in the course of general practice. Essays are to be submitted before December 31, and the prize will be awarded at the 1933 meeting of the association. This award was established by the council of the British Medical Association for the promotion of systematic observation, research and record in general practice.

Council to Regulate Medical Advertising.—The government of Yugoslavia is reported to have decreed that all medical advertising must be scrutinized by the permanent expert council of the ministry of social welfare and public health before it can be placed in newspapers and magazines. The advertiser must submit to the council the text of the advertisement, with any illustrations to be used, together with a copy of the permit to sell in Yugoslavia and any other data serving to classify the medicine, together with the prescribed fees, which amount to about $30. He must in addition bind himself to supply to the council the first copy or issue of the paper or magazine and subsequently one copy of the newspaper each month and a copy of the magazine every three months. On all printed advertisements there must appear this legend: "Approved by the Ministry of Social Welfare and Public Health, S. Number ——" and the date. These regulations apply to "every individual or firm, domestic or foreign, having the right to produce, sell or import into the country medicines and medicinal specialties, and wishing to advertise these in the daily papers or in any other manner," according to the report.

Society News.—The headquarters of the International Congress on Biliary Lithiasis, which is to be held at Vichy, France, September 19-22, announces that the principal French railways have extended the time during which the vouchers for special rates may be used from fifteen to thirty days. They can now be used for the whole month of September, thus allowing physicians attending the congress to remain in France longer if they desire. The latest date for receiving applications for membership in the congress is August 1.——A society for the study of the physiology and pathology of the voice and speech was founded in Paris, May 9, to be known as the "Société Française de Phoniatrie." The officers are Professor Moure, president; Dr. Hautant and Professor Lemaitre, vice president, and secretary, Dr. Tarneaud, 27, Avenue de la Grande Armée, Paris 16.——The International Society of Orthopedic Surgery will hold its second congress in London, July 19-22, 1933. The subjects chosen for consideration are "Mechanism of Articular Movements in General" and "Treatment of Tuberculosis of the Hip." Professor Nové-Josserand, Lyons, France, is president of the congress and Dr. Delchef, Brussels, Belgium, secretary.——The Surgical Society of Egypt was formed at a meeting, April 8, at the Faculty of Medicine, Kasr El Eini, Cairo, called by Prof. Aly Ibrahim Pasha, the dean. This action was prompted by the decision of the International Society of Surgery to hold its next congress in Cairo in 1935. A committee of nine surgeons was appointed to draft statutes for the new society and to represent Egyptian surgeons at the congress.

CORRECTION

Administration of Arsphenamine.—In Queries and Minor Notes, THE JOURNAL, June 11, page 2157, appears the statement that 0.85 cc. of tenth normal sodium hydroxide is to be used to each tenth of a gram of arsphenamine. Dr. C. H. McDougall of Washington, D. C., calls attention to the fact that this statement should read: 0.85 cc. of normal sodium hydroxide to every tenth gram of arsphenamine.

Foreign Letters

LONDON

(From Our Regular Correspondent)

June 13, 1932.

The Sterilization of Defectives

A conference on voluntary eugenic sterilization has been held by the Eugenics Society. Dr. R. L. Langdon-Down, an authority on mental deficiency, said that it was not easy to determine what proportion of defectives was due to heredity. But even if sterilization could reduce the incidence of defect to only a slight degree, that was sufficient reason for asking that the legal obstacles to voluntary sterilization be removed. Medical opinion was almost unanimous that certain cases of mental deficiency were preventable by this means and by no other. Sir Thomas Horder said that sterilization differed from birth control not in principle but only in efficiency. But in the present state of the law if the operation was performed on other grounds than in the interest of the patient's health, the surgeon would be in danger of an action for damages, notwithstanding that the full consent or even request of the patient was given. The danger would be all the greater if the operation was performed at the request of the patient's guardian.

Mrs. C. B. S. Hodson called attention to the experience of some American states in which sterilization of mental defectives had been carried out for about thirty years. There appeared to be a diminished tendency to promiscuity among those operated on, probably because of careful education in the institutions and supervision afterward. Miss Pocock stated that Alberta, Canada, was the only province in the British empire which had an act authorizing sterilization of the mentally defective. This came into force in 1928 and, by the end of 1931, 106 cases had been presented for sterilization and the operation had been approved in 101.

The British government has appointed a committee of members of the medical profession and others to examine and report on the information already available regarding the hereditary transmission and other causes of mental disorder and deficiency; to consider the value of sterilization as a preventive measure, having regard to its physical, psychologic and social effects, and to the experience in other countries of legislation permitting it; and to suggest what further inquiries might usefully be undertaken in this connection.

Bill to Increase the Liability of Drivers in Automobile Accidents

The appalling number of road accidents has produced a public outcry, but in spite of recent legislation the government has not been able to do much to reduce the evil. In the House of Lords, Lord Danesfort introduced a bill entitling persons injured on roads by automobiles to recover compensation when they have not themselves caused the accident, without having to prove (as at present) negligence or misconduct on the part of the drivers. He pointed out that more than half the deaths on the road caused by automobiles were those of pedestrians, and many of the victims were children. At present the dice were loaded against pedestrians getting damages, and though insurance companies often behaved generously in the more serious cases they fought in their own interests and raised every possible legal defense. If the pedestrian was killed, the important witness for enforcing the claim was not available, and if he was seriously injured his recollection was probably confused. The difficulty and expense of providing other witnesses had resulted in pedestrians being compelled to accept what compensation the insurance company cared to give. Even if he succeeded in proving negligence on the part of the driver, the pedestrian was then faced with the necessity of rebutting the defense of contributory negligence on his part. If he failed in

this, his claim might be rejected entirely. To do justice between drivers and the injured, the defense of contributory negligence should be abolished. Instead of being safe, the highways had become the most dangerous places in the country —infinitely more dangerous than railways.

The lord chancellor said that it was difficult to offer any strong opposition to the bill. Inquiries showed that it would cause a considerable increase in the premiums charged by insurance companies for automobile policies. Another effect would be that unscrupulous litigants would press more claims of an excessive or unfounded nature. For the government, Earl Plymouth, parliamentary secretary to the ministry of transport, said that the bill left the automobile driver with only one line of defense—to prove that the accident was due to the injured party. In every European country except two, other lines of defense were allowed. While not unsympathetic to the bill, the government felt that it had gone too far, but it would not oppose it. The bill was read a second time by a majority of 22 to 8.

Investigation of Cancer of the Breast

Some important conclusions are contained in a report by Dr. A. P. Luff on a collective investigation of cancer of the breast, initiated by the British Medical Association. Physicians were requested to keep a record of all cases that came under their notice during the period of the year ended September, 1930. The object was to obtain precise information as to the previous history, evolution (especially of the first symptom) result of treatment and duration. Reports of 1,651 cases had been received. The following conclusions were drawn. 1. The liability to cancer of the breast is not increased by bearing a large number of children. 2. The proportion of cases is higher in nonparous married women and in single women. 3. A painless lump was the first symptom noticed by the patient in 79.5 per cent of the cases, a painful lump in 8.7, and pain alone in 5.1. 4. Preceding breast troubles (injury, mastitis, abscess, sore nipple and Paget's disease) do not appear to be factors of much importance. 5. Pain was completely absent in two thirds of the cases and was not severe in the great majority of the remainder. 6. Only 23.1 per cent gave a family history of cancer. 7. The complete operation gave much better results than the incomplete. 8. The medullary type was the worst form of the disease. 9. Under 50 years of age, scirrhus is the least common type; over 50, the most common type. 10. Prophylactic treatment with radium after operation exercises a beneficial effect, as shown by the higher survival rate and lower recurrence rate, as compared with patients who either had no prophylactic treatment or prophylactic treatment with x-rays. 11. Prophylactic treatment with x-rays after operation is useless.

An Inquiry into Mass Radiation

The controversy aroused by the decision of the National Radium Commission to withdraw the 4 Gm. radium bomb from use, as the results were not satisfactory, has been previously reported (THE JOURNAL, April 2, p. 1197). A conference has been held by leading members of the profession, including the presidents of the Royal Colleges of Physicians (Lord Dawson of Penn) and Surgeons (Lord Moynihan) and members of the commission. The conference unanimously arrived at the following conclusions. 1. The Radium Commission was right in discontinuing the use of the 4 Gm. bomb at the present juncture, though this decision is without prejudice to the question of the therapeutic value of 4 Gm. or even larger aggregations of radium. 2. A fully equipped radium institute is needed in London, where the more difficult and speculative problems connected with radium and ray therapy can be studied by the combined efforts of a trained staff. 3. An expert committee should be appointed, with the following references: (*a*) What is the scientific case for mass radiation by radium and what are its advantages and dangers? (*b*) What are the advantages and risks of massive surface irradiation by radium compared with that of radium needles and radon seeds? The expert committee has been appointed. It consists of two physicists (Lord Rayleigh and Prof. J. C. McLennan) and specialists in the radiotherapy of medicine, surgery and gynecology and in experimental irradiation.

PARIS

(From Our Regular Correspondent)

June 8, 1932.

The Need of Classical Training for Physicians

There is still considerable discussion in high medical and political circles on the subject of the need of requiring students of medicine to possess a knowledge of Latin and Greek. The bill presented to the senate by Dr. Armbruster, senator from the department of Aube, and endorsed by his colleague Debierre, senator from the department of Nord, who has since died, aroused great interest in the medical syndicates; for, demanding, as it does, for admission to the facultés de médecine, the possession of the type of baccalaureate degree that includes Greek and Latin studies, it would tend to limit the number of medical students, eliminating those who have had only a purely scientific training, and also many foreign students. The project would indirectly diminish the crowding of the facultés de médecine. The bill has been passed by the senate but not as yet by the chamber of deputies, in which a new majority, influenced by socialism, has no sympathy for classical culture and is inclined rather to open the way to higher education to the masses who have not as thorough an education and among whom Latin, especially, is regarded as associated with the conservation of the Roman Catholic faith. With the intention, no doubt, of exerting pressure on the sentiments of the new chamber of deputies, which will soon convene, many meetings have been held in favor of Greek and Latin studies as a necessary preparation for the study of medicine. One meeting, which was particularly important, was a public debate, held under the chairmanship of Professor Lépine, dean of the Faculté de médecine de Lyon, in the town-hall of the tenth arrondissement in Paris. Professor Rist, who was the first speaker, upheld the need of a knowledge of Latin, which was the forerunner of French, but Greek he would leave an optional study. Professor Sergent protested immediately, calling attention to the abundance of medical terms derived from Greek roots and emphasizing the great value of Greek roots in forming new medical terms, since a single compound word often takes the place of a long definition. In his opinion, if the physicians approved the suppression of the Greek, the politicians would not hesitate to follow with the abolition of the Latin. Mr. Armsbruster, Mr. Blum, professor at the university, and Dr. Cibrié, secretary of the Union des syndicats médicaux and a delegate of the Société corporative des étudiants en médecine, spoke along the same lines and demanded for the physician the highest intellectual culture possible, in order that he might contend against the moral weakening of the profession in the midst of the so-called realist spirit (but in reality a material and commercial spirit) of the present day. Shortly after this meeting, which appeared to influence public sentiment to a certain extent, the alumni association of the lycées of France and the colonies held its annual meeting at Rochelle. Its members are scattered today throughout many different professions. A similar debate was held, and the meeting pronounced unanimously in favor of making Latin and Greek compulsory requirements for admission to the study of medicine.

Surgical Shortening of the Sound Limb in Coxalgia

The Société des chirurgiens de Paris has heard, of late, many presentations of cases in which a surgical shortening of the sound limb in coxalgia, which operation appears to be coming into favor, was performed. In reality, the operation is not new. It was performed for the first time by Calvé of

Berck, who made a resection of the sound femur in a patient to bring the healthy leg up to the exact level of the leg shortened by coxalgia. The lameness is not totally suppressed, for the operation does not remedy the luxation of the hip; but the operation contributes considerably to the comfort of the patient, since he can walk afterward without an orthopedic device and can enjoy open-air life, which is so necessary for persons convalescing from tuberculosis of the bones. The operation was next performed by Dr. Raphaël Massart in France, and later by Hugo Camera at Turin, in 1931. Massart described to the society the technic of the procedure that he employs, and reported the excellent results that he secured from the operation. He sees only two objections to this form of intervention: the difficulty of inducing the patient to accept the operation, which reduces his height by from 5 to 6 cm., and the risk involved in any surgical operation that is not absolutely needed. Massart first assures himself, by means of careful roentgenologic examinations, of the absolute soundness of the bone that he plans to resect. Preliminary to the operation he disinfects scrupulously the skin of the adjoining area, and performs his resection so that the two bone fragments fit together exactly. A simple metal ring unites the fragments and the limb is placed in an extension apparatus for forty days. The results that he has secured were practically perfect. Mr. Marcel Galland, while approving the method of Calvé, emphasized the fact that absolute correction of the lameness cannot be attained by such an operation.

A New Conception of Mumps

The old conception, dating from Hippocrates, which considered mumps a local disorder—a parotiditis—with various later complications, is no longer tenable. It is evident that mumps is a general infection, which is known to be extremely contagious and which has as its causative agent a specific organism, concerning which, it is true, there is no common agreement. Mr. Philibert, associate professor at the Faculté de médecine de Paris, in an article published in the *Progrès médical*, holds that mumps infection is due to a cytotropic and neurotropic virus comparable to that of rabies. Having penetrated the organism by a route still undetermined (possibly the conjunctiva), this virus reaches, through a process of selection, the nerve centers, provoking in the meninges a more or less intense reaction. If but slightly virulent, it causes only slight and transitory lesions. If more active, it may bring about the destruction of nerve cells, and hence definitive paralysis, which is sometimes observed. From the nerve centers, it is eliminated by the salivary glands, of which it may or may not provoke a swelling and partial destruction; likewise by the pancreas, the testis and the kidneys. To sum up, mumps must be regarded today as a primary neuraxitis, accompanied by secondary lesions of the salivary glands, the pancreas and the testis.

Deaths

The death of Dr. Sherwood Dunn, at the age of 65, is announced. He was a member of the faculty of medicine of Paris and of the University of New York. He had previously served as an associate professor of the University of Boston. At Paris, he was elected a member of the Société de gynécologie et d'obstétrique. During the war, he served as the head of the American Red Cross unit at Amiens, holding the rank of colonel, and was severely wounded at Compiègne. He was awarded the title of Officer of the Legion of Honor. He was medical correspondent, in France, of several American journals. He resided, for the most part, at Nice, where he had founded the American Club.

The death of Mr. Pierre Breteau, as the result of an automobile accident, at the age of 50, is announced. He was a member of the Academy of Medicine, and was professor of chemistry and chief pharmacist at the Ecole militaire du Val-de-Grâce. He was the author of numerous works on the alkaloids, the hematins of the blood, oxydase reactions, and kindred topics.

BERLIN

(From Our Regular Correspondent)

May 30, 1932.

The Swarm of Charlatans in Germany

According to an official survey contained in the *Reichsgesundheitsblatt*, the number of lay practitioners in the German *reich*, during the past two generations, was as follows:

Year	Totals	Females	Per 10,000 Inhabitants	For Each Ten Physicians
1876.....	670	95	0.16	0.49
1909.....	4,468	1,322	0.70	1.46
1927.....	11,761	2,832	1.86	2.70
1928.....	12,098	2,803	1.90	2.63
1929.....	12,413	3,091	1.94	2.61
1930.....	12,942	3,094	2.01	2.74

In fact, there were more lay practitioners than these records show. This official report, however, deserves careful study, for it shows clearly the danger that threatens the health of the German people at the hands of charlatans. This report of the federal bureau of health reveals that the charlatans, that is, "unlicensed persons who treat patients as their regular occupation," show an increase of 4.3 per cent over the previous year, whereas the total number of persons engaged in the treatment and care of the sick increased only 0.3 per cent. If the defects and omissions of statistics are taken into consideration, it must be admitted that not nearly all wandering charlatans are included in the foregoing table. In the first place, there is a large number of quacks that failed to register with the police, as they are required to do. Furthermore, there is the immense army of pedlers with charlatanic tendencies, 700 of whom, according to court testimony, were employed by a single firm (the Fi-Sü G. m. b. H., Frankfort-on-Main), which was recently dissolved. Then there are the countless ranters and wandering healers belonging to the associations of charlatans, who, as is not so generally known, constantly lambast in their harangues all scientific medical research, deride the government's administration of medical affairs and, without stint, heap scandalous charges against the German physicians. In the foregoing official table the female lay practitioners are likewise estimated too low, since countless fortune tellers, astrologers and graphologists, who, as is well known, nearly all give medical advice and medical treatment, are not enumerated. Mention may be made also of the countless number of societies that, under the name of organizations or leagues for the care of public health or the promotion of a certain method of healing, carry on the treatment of their sick members as if a social game were involved. But even taking these incomplete statistics, there were, in 1930, in Germany 27.4 charlatans to every hundred physicians. From two other tables published in the *Reichsgesundheitsblatt*, it may be seen that in Saxony there were 1,759 charlatans as against 3,550 physicians (nearly 50 per cent); in Hamburg, 1,119 charlatans as against 1,523 physicians (73.5 per cent). No doubt the distress connected with the bad economic situation, during the past year, has induced more persons than ever to adopt the lucrative occupation of a charlatan, which requires no previous training, no factual knowledge and no material equipment. But the gravest danger does not lie in the increasing numbers of charlatans. The federal government, the legislatures and the general public would get a clearer idea of this menace if, not stopping with dry figures, exhaustive official reports of the disasters caused by charlatans could be published.

Answers to the following questions would be valuable: 1. What callings or occupations did the 12,942 charlatans abandon to take up the occupation of lay practitioners? 2. What is the average occupational training of the charlatans in Germany? 3. What diagnostic and therapeutic methods do

they employ? As the health officers (the communal physicians, the district physicians and others) have in their possession the official list of registered charlatans, statistics on their antecedents would not be difficult to secure nor involve much expense. Such an official inquiry would seem to be worth while. Thus far the reichstag has failed utterly in its endeavors to curb the growth of charlatanry.

Progress in Supplying Aid to Tuberculous Patients

As evidence of progress in the supplying of aid to tuberculous patients, it may be mentioned that, according to the reports of the German care-taking centers for the tuberculous, for the fiscal year 1930, as published in the *Tuberkulose-Fürsorgeblatt*, more patients with active tuberculosis have a bed of their own than in previous years. Whereas, as recently as 1925, about 31 per cent of patients with active tuberculosis did not have a bed to themselves, the number has been constantly reduced in recent years, and in 1930 had dropped to 4 per cent. Of 111,000 patients with active tuberculosis, there were only 4,481 that did not have a bed to themselves.

ITALY

(From Our Regular Correspondent)

May 15, 1932.

New Method of Taking Roentgenograms of the Lungs

Professor Torelli communicated recently to the Federazione per la lotta contro la tuberculosi in Rome a new method for the taking of lateral roentgenograms of the pulmonary apexes. In the ordinary lateral roentgenogram, the upper third of the pulmonary field is invisible because covered by the shadow of the shoulder, whereas in the lateral roentgenogram taken by the Borson-Kappenstein method (axilla-shoulder) only the upper part of the apex is visible. With the Torelli method, the patient is placed with the side toward the roentgen apparatus, with the arm of the side to be examined held high above the head, while the shoulder of the opposite side is allowed to droop. The exposure results better if preceded by radioscopy. The cone of rays enters the shoulder of the opposite side, traverses the upper part of the mediastinum, the upper third of the side to be examined, and emerges from the axilla that rests on the apparatus. In the roentgenogram the field of investigation appears as a triangle, the sides of which are formed posteriorly by the shadow of the spine and below by the clavicle of the side to be examined. This exposure is especially valuable in bringing out the cavities of the upper third when the sagittal exposure is not sufficient to secure an accurate cavity diagnosis.

Center for Bibliographic Information

At the Biblioteca Vittorio Emanuele in Rome, the Centro nazionale di informazioni bibliografiche has been established, the object of which is to furnish to Italian and foreign students such information as will aid in their research and to point out the libraries in which they can find the publications and manuscripts that interest them. The organization will also function as an intermediary organization for the exchange of information of a bibliographic nature. The Italian libraries are under obligation to comply with the requests for information submitted to them by the newly established center.

New Sanatoriums

Under the auspices of the Cassa nazionale per le assicurazioni sociali, and for the purpose of promoting the crusade undertaken against tuberculosis, thirty new hospital-sanatoriums are in course of construction, which will have a bed capacity of 9,000. Plans for thirteen more sanatoriums to be located in various regions are being considered, and it is hoped that in 1934 the Consorzi provinciali antituberculari (provincial antituberculosis societies) will have about 17,000 beds available in fifty hospital-sanatoriums, in addition to the patients enrolled in the village of Abetina di Sondalo, in Valtellina.

Italian Contributions at International Congress of Surgery

At the Congresso internazionale di chirurgia, held at Madrid last March, the Italian surgeons made notable contributions. Professor Lusena of Genoa collaborated on the subject of surgery of the esophagus, speaking on the traumatic lesions and their outcome, lacerations and wounds, traumatic paralysis, burns and cicatricial stenoses. He surveyed the pathology and the clinical aspects of the various types of diverticula, for which he considers the Mayo method the best form of treatment. In esophageal cancer, a resection is technically possible in any segment, but it is difficult to carry out and the percentage of recoveries is low.

Professor Ascoli of Rome presented a paper on "Tuberculous Pulmonary Suppurations." Among twenty-seven cases observed in the Clinica chirurgica at Rome, only one case was postoperative. For the differential diagnosis, the radiologic examination and bronchoscopic examinations are useful. Of the twenty-five patients, three made a spontaneous recovery; thirteen recovered after an operative intervention, and eleven died following the operation.

Professor Dominici of Perugia spoke on intraspinal tumors, reporting the statistics of sixty-three cases of spinal tumors that came to operation in Italy, and emphasized that good functional results were obtained only when the intervention was early; if possible, in the first, preparaplegic stage. In that stage, however, the diagnosis is difficult, owing to the varied nature and slight significance of the symptomatology. In doubtful cases the speaker favors exploratory laminectomy.

BELGIUM

(From Our Regular Correspondent)

May 18, 1932.

Social Insurance

The question of the advisability of enacting a social insurance law is interesting all medical circles and is much discussed at medical meetings. Opponents of such legislation are calling attention to the fact that a plebiscite in Switzerland has definitively condemned social insurance. The Academy of Medicine of Belgium has been studying the question. It has refused to take a stand on the economic and social need of social insurance, contending that it is not qualified to do so. But it considers it a duty urgently to call the attention of the government to the inevitable and profound repercussive effects that social insurance will have on the practice of medicine and pharmacy and on the welfare of patients, and likewise on the professional interests and possibly even on the morale of the medical and pharmaceutic professions. The academy has repeatedly emphasized that if the social insurance law is enacted, provisions must be made that will guarantee to physicians the free practice of their profession, preserve its liberal character in general and maintain intact the right of privileged communication, which is an actual public need. The academy has especially stressed the great importance of special legislative measures that will protect the clinical instruction at the universities. Such instruction would, it contends, be menaced by the creation of hospitals, clinics and other therapeutic institutions that would not be recognized as indispensable.

Enameling and Lead Poisoning

Addressing the Société de médecine et de chirurgie du travail, Mr. Glibert, president of the Comité technique representing the interests of victims of occupational diseases, called attention to the fact that certain enameling processes are exceptionally harmful because the enamels contain lead, since the morbidity is sixty times that of the general average of the industries that

expose workmen to lead poisoning. According to the writer, the suppression of the use of lead-containing enamels is feasible and should be done.

Organization for the Promotion of "Social Prophylaxis"

The executive committee of the Fédération médicale belge has decided to create an organization for the promotion of "social prophylaxis." Physicians attached in any capacity to an organization of social medicine are invited to cooperate. It is a question of the forming, under the egis of the Fédération médicale belge, of a section for the study of social medicine, the principal object of which will be to coordinate the efforts of the organizations mentioned with a view to establishing a better prophylaxis of public health. The first questions studied will be (1) the right of privileged communication in relation to social medicine (certificates, inquiries), (2) the collaboration of medical practitioners with medical consultants, and (3) relations between consultants and practitioners from the point of view of treatment.

Cerebrospinal Meningitis in Camps of the Union Minière

In the medical bulletin of Katanga, Dr. Van Nitsen gives an account of the epidemic of cerebrospinal meningitis in the camps of the Union Minière during the period 1925-1930. Cerebrospinal meningitis, which is endemic in Katanga, manifests itself usually in sporadic cases. In 1925 there arose in the camps of the Union Minière a severe epidemic, which lasted through 1926, 1927, 1928 and 1929. In 1930, only rare sporadic cases were noted. The measures adopted to combat the epidemic consisted in preventive vaccination by means of a vaccine prepared from local strains, and hygienic measures looking chiefly toward an improvement in the dwellings of the native workers. These measures had a favorable effect on the epidemic, but it is difficult to say which one exerted the chief influence. The author believes that the results obtained should be attributed to the hygienic measures rather than to the vaccination.

Death of Dr. Heymans

The death of Jean François Heymans, emeritus professor at the University of Ghent, is announced. In Professor Heymans one of the beautiful figures known throughout the extent of international science has passed from the scene of action. His professional career began at Ghent in 1890, and in 1896 he accepted the chair of therapeutics and pharmacodynamics. Professor Heymans founded, thirty-six years ago, in collaboration with Professor Gley, the *Archives internationales de pharmacodynamie et de thérapie.*

The New School Ship

The *Bruxelles médical* publishes an interesting description of the new school ship, designed to replace the *Avenir.* The new ship bears the name *Mercator,* in memory of the eminent Belgian who invented the hydrographic or marine map. This school ship, the plans for which were drawn by Baron de Gerlache, includes a medical department and hygienic improvements that deserve special mention. The spacious hospital quarters are amidships, which assures to patients the maximum of stability. That is one of the desiderata recommended by the Maritime Conference of Geneva and by the Congress of the International Association of Officers of the Merchant Marine. The medical rooms, which are large, well lighted and well ventilated, include a consultation room, an operating room, an infirmary, bathrooms, and a pharmacy. An isolation ward with hygienic equipment is located in the center of the upper deck. All the medical equipment is of Belgian manufacture. Special provision is made for taking on board large supplies of drinking water, which may be three times the minimum required. All the floors will be covered with linoleum, kept clean by a special mopping process. The ancient deplorable custom of flushing the interior of the ship with the hose, a system condemned by all hygienists but which it is so difficult to uproot from a milieu in which the influence of tradition is often paramount, will thus disappear. The bedding will be stowed, during the day, in a special place under the bulwarks, where it can be properly aired and sunned. Shower baths have been provided.

The Association of Clinics

Under the auspices of the Fédération médicale belge, an association of the medical directors or mandataries of clinics and policlinics has been created. The purposes of the association are to (1) strengthen the ties between medical directors or mandataries of the various clinics and policlinics of medicine, surgery and the specialties; (2) apply the adaptation of the rules of deontology and of confraternization to the administration of clinics and policlinics; (3) combat the illegal practice of the art of healing and charlatanism; (4) supply members with literature deemed valuable and useful, and (5) supply the public and the insurance organizations, mutual aid societies, administrations and other groups with a complete list of medical institutions. The researches of the association will have as their chief objectives (1) establishing of ties of solidarity between its members with a view to promoting harmony between the various organizations; (2) adoption of minimum tariff schedules in accord with the Fédération médicale belge, and taking account of the regional needs, and (3) study of the questions that are submitted to it by the executive committee of the Fédération médicale belge.

AUSTRALIA

(From Our Regular Correspondent)

May 16, 1932.

The Third Australian Cancer Conference

At the third Australian Cancer Conference, many facts were brought out. The facilities for the treatment of cancer in Australia have been expanded during 1931 in respect both of accommodation for patients and of additional apparatus for treatment. The use of radon has been extended during the past year. It is now being prepared in Melbourne, Sydney and Adelaide, the year's output being 17,021, 2,040 and 4,200 millicuries, respectively, for each center. This represents an increase of 43 per cent over 1930.

CANCER STATISTICS

In the last three and a half years, to Dec. 31, 1931, more than 9,000 persons have received treatment with radium at the several treatment centers for various malignant and other conditions. The exact number is not known, owing to failure on the part of some of the treatment centers to supply their figures. Of 3,031 patients treated for carcinoma (excluding rodent ulcer) in all stages of the disease in the three years ended June 30, 1931, 2,000, or 36 per cent, are alive and free of symptoms; 22 per cent are known to have died of cancer. Of 1,265 patients with carcinoma classed as operable, 54 per cent are alive and free of symptoms. Only 4 per cent are known to have died of cancer, but in 22 per cent information as to the subsequent history of the patient is not available.

Although the year 1930 showed a decline in the cancer mortality rate for the commonwealth per hundred thousand of mean population, of the total deaths from all causes the proportion that was due to cancer still continued to rise. Thus, among males, one death in every 9.8 and among females one death in every 8.1 was caused by cancer in 1930, this proportion being the highest yet registered in the commonwealth. Neglecting the population under the age of 40 years, in which death from carcinoma seldom occurred, the mortality statistics showed that in males dying after the age of 40 one death in every eight was due to cancer and in females one death in every six. The steady rise in the cancer mortality rate, which was apparent for many years, mainly appears in carcinoma

of various organs. The mortality rate from sarcoma is now practically at the same figure that was recorded twenty years ago and has shown relatively little fluctuation in the interval.

As regards regional cancer, mortality from cancer of the tongue in males showed a definite decrease. The rate per hundred thousand of mean population in 1908 was 3.9; in 1930 it was 2.7. Whereas in 1908 one death in every seventeen deaths from cancer was due to carcinoma of the tongue, the proportion in 1930 was one in thirty-five. In females (among whom cancer of the tongue was relatively rare) there was no corresponding diminution in mortality rate, but rather an increase. In no region except that of the tongue did a diminishing mortality rate for cancer appear. In respect of some regions, however, the mortality rate increased much more rapidly than in others. Thus in females the mortality rate from carcinoma of the breast increased at a much faster rate than that for carcinoma of the female genital organs. The region in which the most rapid increase in the mortality rate from cancer occurred was the digestive tract (esophagus to rectum). Here the increase since 1908 was approximately 100 per cent in males and 80 per cent in females. In males, 1 death in every 1.9 deaths from cancer was attributable to cancer of the digestive tract. In females the proportion was 1 in 2.6. In cancer of the skin the mortality rate, which until 1918 steadily rose, has shown since that date a distinct though fluctuating tendency to fall. In 1918 the mortality rate from cancer of the skin was 5 per hundred thousand of mean population. The rate for 1930 was 4 per hundred thousand. The records of cancer treatment centers were kept on uniform lines, enabling the statistical material to be consolidated. The period covered by these returns was only three years, and this period is not long enough to enable detailed conclusions to be drawn as to end-results of treatment. One or two wide facts of interest can, however, be indicated. In a period covering approximately three years to Dec. 31, 1931, the total number of patients treated by means of radium or radium combined with some other method by treatment centers associated with the national organization for the control of cancer in Australia was 9,431. Of these, 4,025 were treated for carcinoma, 3,011 for rodent ulcer, 247 for sarcoma, and 271 for conditions such as endothelioma, melanoma, teratoma and conditions of doubtful malignancy. The remainder suffered from benign tumors or other nonmalignant conditions.

These figures do not include any cases of cancer in the treatment of which radium was not used. Of 3,031 patients with carcinoma treated by means of radium or radium combined with some other method up to June 30, 1931, 36 per cent were alive and free of symptoms at the end of 1931, 22 per cent were known to have died of cancer, and in 17 per cent of cases information as to the end-result was not available. Of 1,265 patients with operable carcinoma, 54 per cent were alive and free of symptoms, 4 per cent were known to have died of cancer, but in 23 per cent of cases the end-result had not been ascertained.

In regard to sarcoma, 45 per cent of the patients with operable and borderline conditions treated during the three years up to the end of June, 1931, were alive and free of symptoms at the end of 1931, whereas, of those with inoperable conditions, 17 per cent remained alive and free of symptoms.

Results of treatment by means of radium and radium combined with other methods were good in the case of cancer of the skin and of the lips and in operable tumors of the buccal cavity, uterus and breast. In a large proportion of cases, however, varying from 29 per cent of patients suffering from cancer of the skin and 30 per cent of those with rodent ulcer to 7 per cent of patients suffering from cancer of the buccal cavity, the end-results of treatment had not yet been ascertained. The information that is being gathered is becoming more accurate, and with greater application in ascertaining the end-results of treatment and with the increasing length of the period elapsing since treatment was given, records will be available of the greatest value in enabling deductions to be drawn as to the true value of the various methods of treatment in cancer of different regions.

CANCER RESEARCH

The most important research work has been carried out at the University of Sydney. There Dr. Warnford Moppett has been investigating the relation between the effects of x-rays on various tissues, including clinical material, and the reaction obtained by him when the chorio-allantoic membrane of the chick embryo is exposed to homogeneous radiations. Experiments carried out illustrate the extraordinary potency of homogeneous radiation. To facilitate the measurement of doses of x-rays, Dr. Moppett constructed a thermo-electrical instrument to record the rise of temperature when radiation is totally absorbed by a bismuth plate. With this instrument the Solomon and international units of x-ray doses have been evaluated in ergs, and variations of x-ray energy dependent on changes of potential and milliamperage have been investigated. Dr. Moppett and Dr. Harker have carried out experiments with sodium iodo-acetate on tumor-bearing mice. They have repeated the experiments of Lundsgaard, who showed that iodo-acetic acid in low concentration, while having little effect on the oxidative metabolism of carbohydrates, exercises a powerful inhibitive effect on the fermentative or glycolytic metabolism. Dr. Moppett and Dr. Harker have given the iodo-acetate orally instead of by injection. They have found that no iodo-acetate is absorbed by the tumors.

Need for an Improved Classification

During the period 1908 to 1923, of 63,148 deaths from cancer in Australia, 26.65 per cent were certified as due to "cancer" without further qualification, 11.74 per cent were certified merely as due to malignant disease, 1.50 per cent as due to malignant tumor, and 0.47 per cent as due to neoplasm. A total of 40 per cent was certified so indefinitely that it was not even known whether the death was from such widely different conditions as carcinoma or sarcoma, except as indicated by the site, and even this was not always indicated. The position is better today but is still bad. What is necessary and has not yet been provided is a uniform pathologic classification for the use of certifying medical officers in the certification of deaths from cancer. This is essential to the proper investigation of cancer.

The international nomenclature of causes of death as amended in 1929 is not satisfactory as regards the classification of cancer. It is realized that a biopsy is almost essential in making a correct certification, and that in many cases, especially in private practice, this is not possible and in certain types of growth is not desirable. It is also realized that a too intricate classification will only cause confusion. It was resolved to appoint a subcommittee to study the whole question.

NOTIFICATION OF CANCER

The question of the desirability or otherwise of making cancer a notifiable disease was discussed at a previous cancer conference, but there had been some divergence of opinion among members. It was decided that steps should be taken to ascertain from the members of the profession throughout the states whether or not the time has arrived to make cancer a notifiable disease. Communications were sent accordingly to the several branches of the British Medical Association asking for the views of the members of each branch on the matter of the notification of cancer. The Queensland, New South Wales, Victorian and South Australian branches were not in favor of notification. The Western Australian branch thought that it was desirable to make cancer a notifiable disease by means of some form of confidential report. No reply was received from the Tasmanian branch.

INFLUENCE OF CONTRACEPTIVES ON THE DEVELOPMENT OF UTERINE CANCER

The influence of contraceptives on the development of uterine cancer had been considered at a previous conference but had been held over pending further investigation. The feeling of this conference was that there was no statistical evidence at present to support such a relationship and that complete statistics were difficult to obtain. In any case, the possible influence was slight compared with that of cervical trauma in parturition and abortion, and cervical infections in the causation of malignant cervical neoplasms. Statistics indicated that the great majority of cases of cervical cancer occurred in married women who had borne children or who, on account probably of some morbid condition of the uterine mucosa, were sterile.

PROTECTIVE MEASURES IN CONNECTION WITH THE USE OF X-RAYS AND RADIUM

The revised international recommendations, as laid down by the third International Congress of Radiology (Paris, July, 1931) had been circularized to all treatment centers. The Australian outlook was that two factors had to be considered: (*a*) the measurement of the radiation intensities and (*b*) the tolerance intensity to which a worker could safely be exposed. It was considered that the best method of measuring the intensity was by the photographic method, and that a fair estimate of the tolerance intensity was 4×10^{-4} r/minutes. Thus in one year of 300 working days a dose of approximately 60 r would be received. As a further precaution, the conference urged the importance of a quarterly exchange of the nursing staff associated with roentgenologic clinics.

Based on the recommendation of the international protection committee that, for voltages of 400 kilovolts peak a thickness of 1.5 cm. of lead or its equivalent should be provided, the walls of a new block that is being built at St. Vincent's Hospital, Melbourne, are being built of barium cement. It has been found by test that a thickness of 10 cm. of such brick is equivalent in protective power to 1.9 cm. of lead. The bricks were made of two parts of coarse barium sulphate, one part of barium flour and one part of portland cement. They were tongued and grooved to prevent joint leakage, and the lead sheeting on the ceiling and sliding doors overlapped the bricks.

TURKEY

(From Our Regular Correspondent).

Ankara, May 16, 1932.

History of the Turkish Red Crescent Society

The conference at Geneva, held Aug. 8, 1864, to which the governments of sixteen countries sent delegates, decided on the basic principles of Red Cross organization. The Geneva convention was signed, Aug. 22, 1864. Twelve months was allowed the various governments for declaring their adherence to the convention. Turkey signed the international agreement, July 5, 1865. The honor of taking the first step toward founding the Red Crescent Society in Turkey belongs to Dr. Abdullah Bey (Hammerschmidt), of German origin, who had spent years in the army medical corps and who attended the sanitary conference in Paris in 1867 as delegate of the Ottoman Empire. On his return, Dr. Abdullah Bey proceeded to the organization of a committee. Numerous were the obstacles. He called on his confrères to form a committee. Only sixty-six persons responded to the call, forty-three of whom were physicians. In July, 1869, the constitution and by-laws of the society were formulated and unanimously adopted by the committee, but the Sublime Porte did not approve of the society under the pretext that the ministry of war regarded it as an encroachment on military affairs. Shortly afterward the second Red Cross conference met in Berlin. The Ottoman Empire was represented by Aristarki Bey, the Turkish ambassador at Berlin, and Husni Bey, military attaché at the Turkish embassy in Paris. Seven years later the Montenegro, Serbian-Turkish war broke out, followed by the war provoked by Russia and Rumania. The reports of the activities the Red Cross societies of neutral countries displayed on the battlefields among the wounded Serbs, Montenegrans, Russians and Rumanians, while the Turkish army was encountering the greatest difficulties in connection with the care of her wounded, at last shook off the indifference which the Sublime Porte had hitherto shown. More than ten years had elapsed since the Sublime Porte had signed the international agreement, but the commanders of the Turkish armies did not even know the purpose and the aims of the Geneva convention. Then Gustave Meunier, president of the international committee of the Geneva convention, wrote to Dr. Peshtemalgian. The contents of this letter were submitted to the imperial medical society, which sent a delegation to Mehmed Rushdi Pasha, the grand vizier. Within a week, a committee was formed at the imperial medical school, where the first meeting took place, July 31, 1876, under the presidency of Marco Pasha, the director of the school.

The question of replacing the "cross" by another suitable emblem was discussed, with the result that the constitution and by-laws of the society were laid down, the organization of a subscription drive was decided on, the members of the administrative council were elected, and a delegation was sent to the war minister. The Sublime Porte asked but one reservation, that the "cross" be replaced by the "crescent" for the Turkish society. The request of the Sublime Porte having been accepted, the war minister approved the society's constitution, and on April 14, 1877, the Ottoman Red Crescent Society was founded. Sultan Abdul Hamid II opened the first session at the Beshiktash palace, thirteen years after the Geneva convention had been signed. The society had been founded on the eve of the Turkish-Russian war (1877-1878) and the armies in Rumania and Anatolia had to be provided with medical supplies. An appeal was made to the public for funds, to the Mohammedans of India and North Africa, and 72,583 pounds Turkish (gold) was realized. When war was over, the sultan, under the pretext that there was no reason for the further existence of the society, ended its activities by depositing the remaining 11,496 pounds at the Ottoman bank. Thus for the second time the society ceased to exist. It was not until 1897, almost twenty years later, that for a short time on the occasion of the Turkish-Greek war the society came back to life. The original founders set to work again. Two hospital ships for the transport of wounded soldiers were equipped and the army was furnished with medical supplies. The minister of finance petitioned the grand vizierate, asking the nomination of a president and additional members with the object of bringing to life the society's activities, but the sultan refused and the end of the Turkish-Greek war was also the end again of the Red Crescent Society. No further activities were possible until the proclamation of the constitution in 1908. In April, 1911, the society was reorganized and placed under the patronage of Sultan Reshad V. The crown prince was chosen honorary president and the society resumed its activities under the name of "Central Committee of the Ottoman Red Crescent," Rifat Pasha, minister of foreign affairs, the president, and twenty-nine members forming the central committee.

It is only since the refounding in 1911 that the Red Crescent Society has had the opportunity to organize its activities unhampered. It has since come to the relief of those in distress in all kinds of local calamities and has been active in meeting part of the needs arising through the Tripoli war of 1911, the Balkan war of 1912, the World War, 1914-1918, and the War of Independence, 1919-1922. When by decision of the great national assembly the Ottoman Empire ceased to exist in 1923, the society's name was changed to "Turkish Red Crescent Society" and in 1925 its headquarters were transferred to Ankara, the capital of the republic.

Marriages

HAROLD BENJAMIN SMITH, North Wilkesboro, N. C., to Miss Mary McLeod, Cheraw, S. C., June 10.

CLARENCE LOVERIDGE ROBBINS to DR. MARION B. LEONARD, both of New Haven, Conn., June 25.

HENRY ROSTLER BLOOM, Boston, to Miss Ruth Naomi Elkins of Chelsea, Mass., June 26.

HARRY ROSENWASSER, New York, to Miss Mildred Boley of Athens, Ga., recently.

CLARENCE W. RAINEY to DR. CLARISSA E. DEVNEY, both of Chicago, April 30.

CHARLES E. HALL, JR., to Miss Virginia Manston, both of Atlanta, Ga., June 20.

EDWARD BERKELEY NEAL, Douglas, Ga., to Miss Ethel Dickerson, May 28.

GLENN R. WALKER, Mobeetie, Texas, to Miss Elise Stiles in Calvert, May 5.

JOSEPH CULLEN ROOT, Akron, Ohio, to Miss Mary Heppberder, April 28.

Deaths

William Tod Helmuth, New York; New York Homeopathic Medical College and Hospital, 1887; emeritus professor of surgery at his alma mater; fellow of the American College of Surgeons; formerly consulting surgeon to the Flower Hospital and the Broad Street Hospital, New York, New York State Hospital for Crippled and Deformed Children, West Haverstraw, Middletown State Homeopathic Hospital, Middletown, Yonkers (N. Y.) Homeopathic and Maternity Hospital, Jamaica (N. Y.) Hospital, Essex County Hospital, Cedar Grove, N. J., White Plains (N. Y.) Hospital, and St. Mary's Hospital, Passaic, N. J.; aged 69; died, June 15, at his summer home in East Hampton, of nephritis and arteriosclerosis.

Eugene Anthony Crockett ⊕ Boston; Harvard University Medical School, Boston, 1891; formerly professor of otology at his alma mater; member of the American Laryngological, Rhinological and Otological Society, the American Otological Society, and the New England Otological and Laryngological Society; fellow of the American College of Surgeons; served during the World War; on the staffs of the Massachusetts Charitable Eye and Ear Infirmary and the Peter Bent Brigham Hospital; aged 64; died, June 13, in Ipswich, Mass.

Edward Evans, La Crosse, Wis.; McGill University Faculty of Medicine, Montreal, Que., Canada, 1887; member and past president of the State Medical Society of Wisconsin; member of the Western Surgical Association and fellow of the American College of Surgeons; served with the American Red Cross during the World War; formerly member of the board of education, and chairman of the city board of health; regent of the University of Wisconsin, 1902-1914; aged 72; for many years on the staff of St. Francis Hospital, where he died, June 1, of bronchopneumonia, thrombosis and arteriosclerosis.

Charles Rollins Grandy ⊕ Norfolk, Va.; University of Virginia Department of Medicine, Charlottesville, 1892; past president of the Medical Society of Virginia and the Norfolk County Medical Society; at one time member of the state board of health; formerly member and chairman of the school board; aged 61; died, June 10, of heart disease.

Amos Jay Hostetler, Lagrange, Ind.; Medical College of Indiana, Indianapolis, 1893; member of the Indiana State Medical Association; past president of the state board of health; member of the school board; formerly proprietor of a hospital bearing his name; aged 65; died, June 12, of progressive muscular atrophy.

Harrie Delmar Handy ⊕ Harwich, Mass.; Hahnemann Medical College and Hospital of Philadelphia, 1893; on the staff of the Cape Cod Hospital, Hyannis; aged 63; died, May 16, in the Massachusetts Memorial Hospitals, Boston, following an operation for vesical calculus, diabetes mellitus and chronic nephritis.

William Broaddus Pritchard, Princess Anne, Md.; College of Physicians and Surgeons, Baltimore, 1884; formerly professor of neurology at the New York Polyclinic Medical School and Hospital, New York; aged 69; died suddenly, June 6, of chronic nephritis and chronic valvular heart disease.

Bascom Franklin Morris ⊕ Tucson, Ariz.; Vanderbilt University School of Medicine, Nashville, Tenn., 1910; fellow of the American College of Surgeons; served during the World War; on the staffs of the Southern Methodist Hospital and St. Mary's Hospital; aged 43; died, June 7, of pneumonia.

Edward Carlin Bennett, Brooklyn; College of Physicians and Surgeons in the City of New York, 1886; member of the Medical Society of the State of New York; formerly on the staffs of the Norwegian Hospital and the Victory Memorial Hospital; aged 68; died, June 5, of heart disease.

Frost Craft Buchtel, Denver; Denver College of Medicine, 1901; member of the Colorado State Medical Society; formerly assistant professor of surgery, University of Colorado School of Medicine; on the staff of St. Luke's Hospital; aged 56; died, May 29, of heart disease.

Henry Blodget ⊕ Bridgeport, Conn.; Bellevue Hospital Medical College, New York, 1881; for many years on the staffs of St. Vincent's and the Bridgeport hospitals; aged 76; died, May 23, of coronary thrombosis, chronic endocarditis and myocarditis.

Joseph Edgar Cook, Cleveland; University of Wooster Medical Department, Cleveland, 1881; member of the Ohio State Medical Association; aged 76; died, May 31, in the Windsor Hospital, of cerebral arteriosclerosis and cerebral hemorrhage.

Jesse B. Munn, Vilonia, Ark.; University of Arkansas School of Medicine, Little Rock, 1899; member of the Arkansas Medical Society; for almost forty years member of the school board of Vilonia; aged 78; died, May 5, of mitral stenosis.

George Foster Comstock ⊕ Saratoga Springs, N. Y.; College of Physicians and Surgeons in the City of New York, 1883; fellow of the American College of Surgeons; surgeon to the Saratoga Hospital; aged 71; died, June 1, of heart disease.

Moses B. Harutun ⊕ Joplin, Mo.; New York University Medical College, 1896; for twelve years commissioner of health and sanitation; aged 65; died, May 19, in a hospital at St. Louis, following an operation for removal of the gallbladder.

Thad Cothern, Jonesboro, Ark.; Memphis (Tenn.) Hospital Medical College, 1905; member and past president of the Arkansas Medical Society; served during the World War; on the staff of St. Bernard's Hospital; aged 51; died, May 17.

Stonewall Jackson Gay, Lineville, Ala.; Southern Medical College, Atlanta, Ga., 1888; member of the Medical Association of the State of Alabama; formerly judge of probate of Clay County; aged 69; died, May 23, of heart disease.

Chambers B. Clapp, Moberly, Mo.; Rush Medical College, Chicago, 1889; formerly member of the school board; for fifteen years president of the Woodland Hospital; aged 73; died, June 12, in a hospital at West Palm Beach, Fla.

John Augustus Leas, Los Angeles; Indiana University School of Medicine, Indianapolis, 1908; member of the California Medical Association; served during the World War; aged 47; died, May 26, of cerebral hemorrhage.

Charles Augustus Leale ⊕ New York; Bellevue Hospital Medical College, New York, 1865; Civil War veteran; first physician to reach President Lincoln when he was assassinated; aged 90; died, June 13, of arteriosclerosis.

Edward J. Brougham ⊕ Chicago; Chicago Medical College, 1887; fellow of the American College of Surgeons; aged 66; on the staff of the Henrotin Hospital, where he died, June 15, of carcinoma of the tongue.

Henry Fleetwood Hoover, Columbia, S. C.; Medical College of the State of South Carolina, Charleston, 1898; member of the South Carolina Medical Association; aged 56; died, June 4, in the Columbia Hospital.

Omar Hollinger Shively, Campbellsville, Ky.; University of Louisville School of Medicine, 1893; member of the Kentucky State Medical Association; aged 60; died, May 28, of myocarditis and coronary occlusion.

Charles E. Neal, Cincinnati; University of Cincinnati College of Medicine, 1913; member of the Ohio State Medical Association; aged 63; died, May 26, of coronary thrombosis and arteriosclerotic heart disease.

Edward M. Boggess, Elwood, Ind.; Medical College of Ohio, Cincinnati, 1887; member of the city board of health; for eight years coroner of Fayette County, Ohio; aged 69; died, May 31, of carcinoma.

George Conderman, Hornell, N. Y.; University of Vermont College of Medicine, Burlington, 1889; formerly mayor of Hornell; aged 63; died, June 11, in a local hospital, of pneumonia.

Francis Edward Lister ⊕ Faith, S. D.; Medical College of Indiana, Indianapolis, 1892; aged 65; died, May 30, in the Black Hills Methodist Hospital, Rapid City, of peritonitis and shock following an operation for ruptured gallbladder.

Charles Benjamin Bomberger, Mapleton, Minn.; University of Minnesota Medical School, Minneapolis, 1925; aged 32; died, June 7, in Colorado Springs, Colo., of pulmonary tuberculosis.

Eva **Elizabeth McKnight** ⊕ Oswego, N. Y.; University of Michigan Medical School, Ann Arbor, 1890; obstetrician to the Oswego Hospital; aged 73; died, June 10, of angina pectoris.

Henry **Raymond Casgrain,** Windsor, Ont., Canada; Faculty of Medicine of Trinity College, Toronto, 1883; served during the World War; aged 74; died, June 16, of heart disease.

Frederick O. Jackman, Bloomington, Ill.; Chicago Medical College, 1887; aged 73; died suddenly, May 30, at his summer home at Bass Lake, Ind., of cerebral hemorrhage.

Daniel **Cessna De Walt** ⊕ Houston, Texas; Baylor University College of Medicine, Dallas, 1909; served during the World War; aged 43; died, May 19, in a local hospital.

William Webster Sadler, Hershey, Neb.; Keokuk (Iowa) Medical College, College of Physicians and Surgeons, 1902; aged 57; died, April 17, of chronic interstitial nephritis.

George Porter Emmons, Lewiston, Maine; Medical School of Maine, Portland, 1885; aged 72; on the staff of the Central Maine General Hospital, where he died, March 27.

Willard Thomas Conley, Dresden, Ohio; Medical College of Ohio, Cincinnati, 1887; aged 70; died, June 11, in the Mount Carmel Hospital, Columbus, of heart disease.

Ira **Otis Tracy** ⊕ Brooklyn; College of Physicians and Surgeons in the City of New York, 1882; aged 73; died, June 4, at Essex Fells, N. J., of carcinoma.

Charles Walker Mangus, Homestead, Fla.; St. Louis College of Physicians and Surgeons, 1891; aged 72; died, May 17, in Miami Beach, of pernicious anemia.

Walter Clay Sturm, Los Angeles; University Medical College of Kansas City, Mo., 1907; aged 52; died, April 2, of chronic myocarditis and coronary sclerosis.

Daniel Miller Sanger, New Lebanon, Ohio; Long Island College Hospital, Brooklyn, 1882; aged 87; died, May 6, of cerebral hemorrhage and arteriosclerosis.

Albert C. Clark, Woonsocket, S. D.; Chicago Homeopathic Medical College, 1895; aged 62; died, April 26, following an operation for gallbladder trouble.

Calvin W. Bufkin, Runnells, Iowa; Medical Department of Drake University, Des Moines, 1898; aged 60; was accidentally killed, June 11, while hunting.

Frank Summers Thomson ⊕ Dayton, Ohio; University of Louisville (Ky.) School of Medicine, 1888; aged 64; died, May 22, of carcinoma of the lower lip.

Francis Wallace Bruce, Carthage, N. Y.; Medical Department of the University of the City of New York, 1882; aged 78; died, May 16, of heart disease.

M. Jackson Anderson, Tampa, Fla.; Meharry Medical College, Nashville, Tenn., 1897; aged 70; died, May 7, of a ruptured appendix and carbuncle.

Thomas H. Bedford, Meshack, Ky.; Hospital College of Medicine, Louisville, 1875; aged 86; died, April 1, in Tompkinsville, of chronic myocarditis.

Paul Traub ⊕ Trenton, N. J.; Medico-Chirurgical College of Philadelphia, 1899; aged 58; died, June 9, at his home in Beach Haven, of heart disease.

Pierre Anselme Rontey, Coscob, Conn.; University and Bellevue Hospital Medical College, 1909; aged 48; died suddenly, May 13, of heart disease.

William Johnstone Latta ⊕ Wagon Mound, N. M.; Chicago Medical College, 1881; aged 75; died, June 4, in the Valmora (N. M.) Sanatorium.

Elmer A. Blessing, Albany, N. Y.; University of Vermont College of Medicine, Burlington, 1885; aged 70; died, May 19, of carcinoma of the liver.

Albert P. Minshall, Viroqua, Wis.; College of Physicians and Surgeons, Keokuk, Iowa, 1890; aged 70; hanged himself, May 17.

Edward B. Felter ⊕ Plymouth, Wis.; Rush Medical College, Chicago, 1891; aged 67; died, June 8, of pneumonia.

Nicholas John Hamilton, Moline, Ill.; Chicago Physio-Medical Institute, 1886; aged 80; died, May 4, of heart disease.

Correspondence

"CESAREAN UTERINE SUTURES"

To the Editor:—The case report by Dr. Harry S. Fist in THE JOURNAL, May 7, page 1635, entitled "Cesarean Uterine Sutures Passed from the Vagina" records an interesting observation but one that bears critical interpretation. Although the patient had a low-grade temperature from 100.6 to 100.8 F. from the second to the seventh day, during which time the lochia were normal, she passed a mass containing the uterine sutures on the eleventh day. This was a necrotic slough. One would like to know how the wound edges were handled before the sutures were placed, whether hemostats or other crushing instruments were used on the uterine incision to control bleeding or to hold the edges in position for suturing.

The indictment of the continuous suture made by the author is not warranted by his single case, as many obstetricians have used continuous sutures with success. I have used continuous sutures consistently for the past five years and have never encountered this complication. Continuous sutures too close or tied too tightly may be a factor in lowering tissue resistance. In regard to Dr. Fist's comment on the integrity of the scar in future pregnancy, I believe that his reasoning is faulty. A wound that heals by secondary intention or granulation results in a *weak scar,* one that is likely to rutpure during subsequent pregnancy or labor. I feel that his patient would entail a serious risk of this accident were she allowed to become pregnant again.

IRVING F. STEIN, M.D., Chicago.

To the Editor:—I can report a case similar to that observed by Dr. Fist, in which the three undisturbed layers of continuous sutures used to close the uterus were passed in the lochia on the tenth day. The patient made an uneventful recovery, showing no abnormality on examination at six weeks. I do not know whether she had later pregnancies.

The method of handling wound edges makes little difference. It has been a common practice for years, at the Chicago Lying-In Hospital, to compress completely the line of incision in the lower uterine segment by means of modified stomach clamps, to render the operative field bloodless. This I have done many times without regret. Now, however, I first incise the entire length in the lower uterine segment even in the presence of placenta praevia cesarea without first clamping. After delivery of the baby I compress both edges from top to bottom with closely approximated tongue forceps, to close all sinuses and also hold the edges in position for suturing. Never have I seen such temporary pressure in this vascular area affect wound healing.

The use of the continuous suture for years without evident bad results does not justify the assumption that other methods are not better. Many conservative surgeons the world over are discontinuing the locked continuous suture in favor of loosely tied interrupted sutures. I have observed this tendency in numerous operators at the County Hospital in Chicago and elsewhere, showing that others appreciate the dangers of ischemia produced by the continuous suture. For primary union, nature requires merely good approximation of clean edges, without disturbance of circulation.

A weak scar will result if a wound heals by secondary intention; however, world reports show that such a scar in the lower uterine segment entails no greater risk than one in the anterior abdominal wall. Indeed, under certain conditions, spontaneous labor and delivery may be permitted, preferably assisted by episiotomy and early forceps.

D. A. HORNER, M.D., Chicago.

[NOTE.—The letters were referred to Dr. Fist, who writes:]

To the Editor:—1. Wound edges were not traumatized by hemostats or other crushing instruments. The upper and lower

ends of the intended incision were delimited and the uterus was steadied by means of two catgut traction sutures, as advised by DeLee and Beck. Thumb forceps were applied gently.

2. Your correspondent makes no indictment of the continuous suture but is now willing to agree with outstanding obstetricians (DeLee, Vaux, Beck) who feel that interrupted sutures are preferable.

3. As to future pregnancy: Elective section for this patient will prevent any danger during labor, and so labor is not discussed.

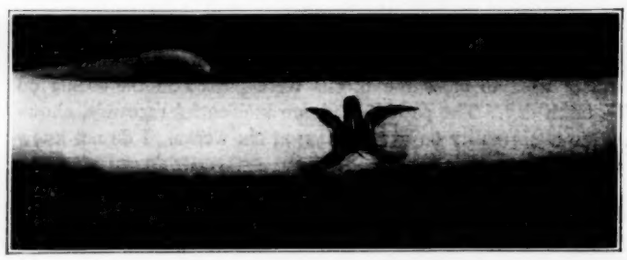
Lack of space prevents lengthy consideration of the prognosis during the prenatal period. This is summarized by the following, quoted from "Cesarean Scars," by Greenhill and Bloom (THE JOURNAL, Jan. 5, 1929, p. 21): "In the entire world literature . . . no uterus ruptured during pregnancy" (following low cervical cesarean section).

HARRY S. FIST, M.D., Los Angeles.

POSSIBLE CAUSE OF EXPLOSIONS IN GAS ANESTHETIC DEVICES

To the Editor:—Recently a harmless explosion occurred here which well illustrates a possibility about which I have spoken before; namely, that flushing the anesthesia machine with oxygen rather than with nitrous oxide, before all the ethylene and ether have been removed, may lead to an explosion.

The anesthetist had been giving ethylene and oxygen. After the operation was finished, the machine was shoved into a



Hole made by explosion in breathing tube.

corner. The anesthetist then emptied the bag by bringing pressure to bear on it with her hand, and then flushed the machine with oxygen. She tried to take the inhaler tubing from the machine, and there resulted a quick explosion. This occurred even though our anesthetists have been warned repeatedly against this particular procedure. The enclosed print shows the hole that was made in the breathing tube. In some way or other the ground wire had become disconnected from the machine, so that it was not attached at the time of the explosion. As has been said, no harm was done in this instance because the machine was far removed from the patient.

On a small scale this illustrates exactly the situation that is being met generally throughout the country when the gas machine is flushed with oxygen instead of with nitrous oxide.

JOHN S. LUNDY, M.D., Rochester, Minn.

"NUTRITION AND MILK PRODUCTION"

To the Editor.—I was much interested in the editorial in THE JOURNAL, June 4, on "Nutrition and Milk Production," and particularly the losses of calcium and phosphorus during the height of milk production.

In an extended study of this subject with cows it has been fairly well shown that the losses of calcium in the height of milk production is a process that cannot be stopped by high injections of vitamin D. It appears to be a normal physiologic process, no doubt induced purposely by an overactive parathyroid gland, which is known to influence the abstraction of calcium from the skeleton and for the purpose of maintaining the calcium levels of the blood normal during the unusual draft of calcium and phosphorus in mammary secretion.

When the parathyroid fails to function at the initiation of lactation, "milk fever" in cattle results. This can be corrected by the injection of parathyroid hormone. "Milk fever" in cattle is a low blood calcium followed by tetany.

Research Bulletin 112 of the University of Wisconsin College of Agriculture shows that in spite of the mineral losses from the skeleton at the height of lactation, as milk flow recedes with progressive lactation, storage of calcium and phosphorus becomes large. The skeleton is as well mineralized for the next lactation, provided there was a rest period between calves, as in the preceding lactation.

E. B. HART, Madison, Wis.

Queries and Minor Notes

ANONYMOUS COMMUNICATIONS and queries on postal cards will not be noticed. Every letter must contain the writer's name and address, but these will be omitted, on request.

NAPHTHA POISONING

To the Editor:—A woman, aged 31, has been employed for fourteen months rolling rings on wet balloons as they return from the dipping room, where they are dipped in naphtha. The symptoms that she presents include dizziness, headache, nausea, tremors of the hands, pain and tingling of the hands and feet, general weakness, malaise, loss of appetite, spots before the eyes, nervousness, irritability, loss of weight, a general run down condition and weak pulse. Examination of the chest is negative for tuberculosis. The heart is slightly enlarged. The pulse is weak and thready. There is a slight anemia. The urine is normal. The blood pressure is 114 systolic and 70 diastolic. The diagnosis is naphtha poisoning. How would this affect the heart and the general condition of the patient? Please omit name. M.D., Ohio.

ANSWER.—The term "naphtha" is loosely applied to several forms of petroleum derivatives, ranging from the low flash gasoline or petroleum benzin through Stoddard's Solvent. From the point of view of toxicity, the chief differences center about vaporability. Whatever the type may be, the following answer is reasonably applicable.

The vapors of naphtha possess about one half to two thirds of the toxicity of benzene (benzol). The manifestations are much the same except with respect to blood changes; when they are due to naphtha, the blood elements are far less affected than when they are due to benzene. Concentrations of naphtha in excess of 0.45 per cent of the vapors may be expected to produce harm if the exposure period exceeds one or two hours. Concentrations of 2.5 per cent may kill in a few minutes. Mild, acute involvement is well known in industry as a "naphtha jag." All the signs and symptoms mentioned in the query may arise. In addition, in slightly severer form, a bronchitis or other evidence of inflammation of the respiratory tract may arise, including, in rare cases, pulmonary hemorrhage.

At necropsy of animals exposed to naphtha, the heart muscle has been found to be suffused with blood. Granular degeneration of the liver and nephritis has been established.

The chronic form of naphtha poisoning presents profound drowsiness or alternating drowsiness and insomnia, rarely sudden onset of unconsciousness, jaundice or bile in the urine, a mild degree of anemia and leukopenia, loss of weight, increased reflexes, sluggish pupils, and abnormalities of taste. On other occasions, chronic naphtha poisoning resembles multiple sclerosis associated with a hepatitis.

MANTOUX TEST

To the Editor:—Could you inform me as to the value of the Mantoux test? I should be glad if you would indicate by whom it was developed and when. DONALD E. MILLER, M.D., St. Peter, Minn.

ANSWER.—The intradermal tuberculin reaction, described independently by Mantoux (*Compt. rend. Acad. d. sc.* **147**:355, 1908) and Mendel (*Med. Klin.* **4**:402, 1908), has been regarded for years as the preferred method. It is more certain of producing a reaction than the simpler Pirquet test, and less objectionable than various other methods.

It affords one of the most certain methods of establishing the presence of a tuberculous infection. This cannot be done, however, without a consideration of age, dosage, condition, and size of a quiescent lesion.

The age of the individual is of importance because a positive reaction in children under 6 years of age usually means an active tuberculous infection. The infection may be chiefly in the lymph nodes, but there rarely has been time for any infection to become quiescent. In an older person a moderate reaction may be present when the tuberculous lesion may be entirely latent without possessing any clinical significance. If the reaction is violent, however (producing a reaction from 1.5 to 2 cm. in diameter), especially with a small dose of tuberculin, it is significant of active infection, even in an adult.

The quantitative aspect of tuberculin is also important. Some begin by using a dosage of 0.01 mg. and stepping up to 0.1 and finally to 1 mg. in 0.1 cc. of saline solution. Usually 0.1 mg. is the starting dose; certainly no more than this should be used in an unknown patient for fear of causing a destructive focal reaction. If this is negative, it is indicative of nothing more, at the most, than a quiescent tuberculosis in the great majority of patients. If 1 mg. is then given and found negative, the test is almost surely negative. In certain rare conditions, such as measles, severe diseases, or terminal or overwhelming tuberculosis, the patients may lose their reactability. In this event it is always well to repeat the test if possible for one or two monthly intervals.

Finally, it is not known with certainty what the least size of a quiescent or latent lesion is that will fail to cause sensitivity. It seems evident at times that there are many small lesions that may not produce a reaction with any size of dosage. Such conditions are, however, not many and are relatively unimportant.

ACNE

To the Editor:—I would appreciate your help in the following case: My daughter has what has been diagnosed by a competent dermatologist as acne, which is mostly on her chin. She is 19 years old and has a strictly negative history in every respect. These "pimples" pop out through the skin at irregular intervals, some of them getting to be half as big as a split pea. Some of them contain pus or a little "core." Sometimes the eruption is worse just preceding menstruation. The menses are regular and there is no cramping. There is a very small enlargement of the thyroid, but it is not toxic. She keeps herself scrupulously clean, and uses a bland soap and face cream. She has taken eight x-ray treatments; she took four, two weeks apart, rested a month and took four more treatments, two weeks apart. This improved the condition for a short time. She also used various sulphur lotions and ointments as prescribed by the dermatologist. She has taken some Finsen light treatments also, which I gave her myself. She eats little meat or carbohydrates. After one of these "pimples" leaves, it leaves a small scar which remains. I have given the patient cod liver oil, also. Please do not publish name or address.

M.D., Indiana.

Answer.—This is the usual history of the adolescent type of acne, which frequently disappears after marriage. The treatment has been along approved lines. Most dermatologists advise an initial course of roentgen therapy in one-fourth skin unit doses once weekly for from eight to twelve weeks. If the acne persists or recurs, roentgen treatment should not be persisted in, and mild ultraviolet treatments may be used as an adjunct. Proper internal treatment and a careful dietetic regimen will control many cases of acne.

In general, an excess of carbohydrates derived from sweets and starchy foods, fats and fried articles should be avoided. It is particularly important not to use iodized salt in cooking. Bromide and iodide tablets and tonics containing iodine may be harmful. An excess of milk is to be avoided. Among the articles prohibited or at least limited are candies, chocolate, ice cream sodas, sundaes, malted milk, rich pastry, mince pie, fresh bread, waffles, griddle cakes, maple syrup, fried sweet potatoes, spices, pork and beans, breakfast sausage, salted nuts, Camembert cheese, Welsh rarebit, and fried foods in general.

The diet should contain an abundance of fresh vegetables, fruits, cereals, plainly prepared meat or fish, and simple desserts. Regularity of meal times and proper chewing of food are essential.

In the care of the skin, massage, facial treatments, face creams and unnecessary manipulation of the lesions must be avoided. A mild superfatted soap should be used daily with warm water followed by cold. If the skin gets dry during a course of treatment, a cold cream may be used at night.

A small percentage of cases can be cured by home treatment with suitable internal and external remedies. Improvement is often slow and uncertain. Yeast has an undetermined usefulness. Mild laxatives should be taken if necessary. Vaccines and serums are occasionally beneficial. Specific instructions for internal medication should be followed.

The object of local treatment is to overcome the excessive oiliness of the skin by reducing the activity of the oil glands and to check the tendency to formation of blackheads and papules. Lotions and salves should be used only when prescribed. Comedones and pustules are best evacuated by the physician using sterile instruments. Modern radiation treatment with roentgen and ultraviolet rays will cure a large percentage of cases if carried out regularly and systematically once weekly for from eight to twelve weeks. Scarring and pitting are minimized by early treatment. Recurrences can be prevented by adhering to a correct diet and by attention to the hygiene and care of the skin.

PARTIAL PARALYSIS AND MUSCULAR ATROPHY AFTER LABOR AND SYMPHYSIOTOMY

To the Editor:—What could be the causes of partial paralysis of the hip and leg following symphysiotomy? A woman of 19 was subjected to this operation as the safest procedure to relieve her of an impacted brow presentation. The symphysis was sutured with heavy absorbable suture, the hips were swathed in adhesive plaster, and she was placed on a Bradford frame for about three weeks. There was paralysis of the bladder necessitating catheterization while she was in bed, but since delivery had been quite difficult this was not thought to be remarkable. At the end of five weeks she began to try to walk with care, and because she complained of right sacro-iliac pain she was fitted with a sacro-iliac belt. But in the following two months she had not improved in her ability to walk. The muscles of the right hip and buttock are painful and show decided atrophy. She drags the right foot in walking and cannot lift it from the bed. The right ankle is very weak and the right knee jerk is greatly exaggerated. The nerve supply of the muscles involved has its origin high above the field of operation. Yet Painter, reporting a somewhat similar case in the *Boston Medical and Surgical Journal*, June 22, 1916, says: "Convalescence was very slow and painful and she experienced great difficulty in walking. She was almost paralyzed in both legs." But how could the operation or the following sacro-iliac strain produce paralysis, especially with atrophy? Could the spinal anesthesia in this case have been a contributing factor? Could a mild diphtheria eight years ago, or an unrecognized poliomyelitis four years ago be possible causes? Would not the exaggerated knee jerk on the affected side indicate a lesion higher up even if there were no other signs or history of such lesion? Even more important, what should the treatment be? Would continued rest for a year be better than encouraged exercise?

HAROLD C. MILLER, M.D., Eglon, W. Va.

ANSWER.—The paralysis and atrophy probably resulted from pressure on the lumbosacral trunk during delivery rather than being related to symphysiotomy. The sacro-iliac pain is likely due to neuritic symptoms but it is possible that the pain has resulted from sacro-iliac strain during the symphysiotomy. Spinal anesthesia has occasionally produced symptoms of transverse myelitis but is probably not a causative factor in this case. The history of diphtheria eight years previously is not responsible, nor could there have existed a poliomyelitis without producing more evident signs in the light of the present situation. An aggravated knee jerk naturally indicates an upper motor neuron disease, and if that is present in this patient one must naturally suspect a lesion situated in the cord rather than in the lumbosacral roots. In that event one would have to consider the possibility of a localized myelitis.

Rest, in order to avoid fatigue, is an important factor in the treatment, but massage, passive motion and even mild active motion will do more in hastening recovery than mere rest in bed. If a foot drop is present, the foot should be supported by a right angle foot brace to avoid overstretching of the extensor muscles.

TREATMENT OF VAGINITIS

To the Editor:—A girl, aged 5, has a gonorrheal vaginal discharge of one and one-half years' duration. Treatment included serums and irrigations of antiseptics. The discharge has subsided, though not completely. Recently I used Presojod; while beneficial, it has not effected a cure. Smears are positive. What further treatment would you advise? Please omit name and address.

M.D., Pennsylvania.

ANSWER.—The most important factor in the management of the case is to attempt to locate the source of the gonococci. Careful examination of the urethra, particularly of Skene's tubules, and a vaginoscopic examination by means of an illuminated vaginoscope or female urethroscope. If the infection originates in the cervix, topical applications may be made through the vaginoscope with mercurochrome-220 soluble or weak silver solutions. If Skene's glands are involved, irrigation with 5 per cent mercurochrome solution through a blunt pointed soft silver cannula should be carried out. Good results in these cases have been obtained when using daily instillations into the vagina of 1 per cent mercurochrome ointment (Stein, I. F.; Leventhal, M. L., and Sered, Harry: Cervicovaginitis, *Am. J. Dis. Child.* **37**:1203 [June] 1929). A cure usually is obtained in from ten to twelve weeks by this method if the technic is followed exactly.

IMMUNIZATION AGAINST DIPHTHERIA

To the Editor:—A child was exposed to a case of laryngeal diphtheria by hugging and kissing the child with the diphtheria. The exposed child is 3 years old. Would it be better in this massive exposure to give an immunizing dose of antitoxin or wait and give a large dose of antitoxin if the child developed diphtheria?

L. J. RUTLEDGE, M.D., McComb, Miss.

ANSWER.—Formerly it was general practice to give an immunizing dose of antitoxin to persons who had been exposed to diphtheria with the idea that it was harmless. It is now known that even a small primary dose of serum may produce alarming and serious reactions. It may also render the individual sensitive to serum administered subsequently. With the multiplication of immunizing and therapeutic serums and their more general use, it has become apparent that hypersensitiveness to subsequent injections of serum should not be established when it can be avoided.

In the case described, it is not at all certain that the second child had received an infecting dose of diphtheria bacilli. The practice followed might well vary with circumstances. If the exposed child cannot be closely watched for the first signs of diphtheria, it would be wise to give an immunizing dose of antitoxin. If, however, the child can be intelligently watched and given a suitable dose of antitoxin at once should signs of diphtheria appear, there would be no disadvantage in waiting. In this way an annoying or serious serum reaction might be avoided, and sensitization to subsequent administration of serum obviated.

ICHTHYOSIS

To the Editor:—My son, who is now 17 years of age, has been afflicted with ichthyosis since 3 or 4 years of age. He is much worse during cold weather. During the summer his skin is soft and does not scale. Local remedies seem to do him no good. He complains that baths make him worse. What would you recommend as the best treatment? Would the violet ray do him good? Please omit name. M.D., Pennsylvania.

ANSWER.—The chief reason that ichthyosis improves in summer is probably that there is more perspiration then, keeping the skin soft. Measures to increase perspiration should therefore be of some help in the winter. Hot baths or sweat baths followed by a cold douche and a rub, and before the skin is quite dry the application of a bland oil or ointment, should be tried. Soap should be avoided as much as possible. Ultraviolet rays tend to dry the skin. A humid atmosphere within doors overcomes part of the drying effect of winter.

DIAGNOSIS AND TREATMENT OF DIARRHEA

To the Editor:—A man, about 55 years of age, who has never had any previous serious illness, stopped in Iowa to visit relatives, about a year ago, while driving home from Florida. While there he had an attack of indigestion, and a physician advised him to use Lacto-Dextrin (Battle Creek). After a few days he developed a severe diarrhea, which he has been unable to control at any time since. This man is a druggist and has taken bismuth, kaolin and opiates without success. What treatment would you suggest? Please omit name and address.

M.D., North Dakota.

ANSWER.—This case demands a complete diagnostic appraisal, as the causes of diarrhea are varied and many. Before a plan of treatment can be outlined, an attempt at diagnosis must be made. In addition to the history and physical examination, the following studies should be carried out: microscopic, chemical and cultural studies of the stools; secretory function of the stomach, duodenum and pancreas; roentgenologic studies of the stomach, intestine and biliary system. One must make certain that parasitic infestation is not an etiologic factor. The treatment is dependent on the cause.

SPINAL ANESTHESIA IN LABOR

To the Editor:—Please give your opinion on the routine use of spinal anesthesia in normal confinement cases. One of the local physicians injects 100 mg. of procaine hydrochloride into the spinal canal to relieve the pain of the second stage of labor. Many of these cases require several injections of solution of pituitary and low forceps to complete delivery. I have never used this method but the patients say that they feel no pain after the spinal anesthetic is given, and some seem to prefer this method of delivery. Please comment on using spinal anesthesia as a routine in normal cases in the second stage of labor. Please omit name and city. M.D., Colorado.

ANSWER.—Spinal anesthesia is becoming safer with the improvements in its technic, but it still has a considerable mortality unless carried out with the most punctilious attention to minute details. This is true of its use in surgery and gynecology but it is more than true in obstetrics.

Kroenig of Freiburg, as long ago as 1913, warned that spinal anesthesia was particularly dangerous in pregnant women, and experience in this country, as well as abroad, has justified this prognosis.

At a recent informal discussion by six obstetricians of note, fifteen deaths during delivery, all following spinal anesthesia, were reported as occurring within a few months.

There are safer anesthetics to assuage the pains of the second stage of labor, and spinal anesthesia should not be used as a routine.

ERYSIPELAS

To the Editor:—For two successive years I have suffered from attacks of facial erysipelas. Is there any reliable method of immunization that could be used to prevent or make less likely a recurrence? Please omit name. M.D., Ohio.

ANSWER.—Recurring attacks of erysipelas usually start from some focus of chronic infection. This should be sought and, if found, it should be appropriately treated. Immunization with comparatively large doses of a standardized erysipelas toxin has given good results in a small series of similar cases.

MYDRIATIC FOR OPHTHALMIC EXAMINATION

To the Editor:—What would you recommend as a safe and rapid mydriatic for ophthalmoscopic examination of the middle aged and elderly as part of a general medical examination? Would you instil physostigmine (eserine) solution afterward as a precautionary measure against glaucoma? Please omit name. M.D., Pennsylvania.

ANSWER.—Probably the simplest rapid mydriatic for ophthalmoscopic examination to the middle aged and elderly is a 2 per cent eucatropine (euphthalmine) solution. It is well to repeat the primary instillation with another drop five minutes later and within fifteen to twenty minutes the pupils will be sufficiently dilated for examination. The subsequent use of a miotic (pilocarpine, not physostigmine) is always a safe measure.

RELATIVE POTENCY OF CODEINE PREPARATIONS

To the Editor:—Please advise me concerning the relative strength of codeine sulphate, codeine phosphate and codeine alkaloid, especially with reference to their use in cough mixtures. Please omit name.

M.D., New Jersey.

ANSWER.—One hundred grams of codeine phosphate is equivalent to 73 Gm. of codeine; and 100 Gm. of codeine sulphate is equivalent to 80 Gm. of codeine. This means that a dose of the same weight of codeine is about one fourth stronger than the same weight of codeine sulphate and one third stronger than the same weight of codeine phosphate.

TREATMENT OF SOFT CORNS

To the Editor:—In THE JOURNAL, April 16, page 1402, was a query regarding the treatment of a soft corn. Soft corns usually occur between the toes near the base, and they may be disabling. Paring and softening with salicylic acid sometimes are not favorable. Corns may be treated satisfactorily, however, surgically.

After injecting well with a local anesthetic under the corn, one can readily remove the corn with a sharp curet such as is used for bone. It may take considerable pressure. The curet should be run around the corn so as to lift it out in one piece. It is surprising how deep some corns are. After the cavity has been touched with an antiseptic solution and simple dressings have been applied, they will readily heal. The pain after removal is less than before. After this treatment, they may not recur. If they do, a curative operation should be done.

Every corn is due to bony pressure either under the corn itself or from an adjacent toe. Palpation will show where this pressure is. Soft corns are frequently due to an overgrowth similar to an exostosis on the side of the metatarsal head. For a permanent cure a small incision should be made so that this projecting bone is exposed and then it can be removed with Rongeur forceps. The corn may or may not be removed at the same time with the curet. Two or three sutures suffice to close the opening, and the corn will be permanently cured.

These operations are described at length in the *Journal of the Michigan State Medical Society* for July, 1930.

J. G. R. MANWARING, M.D., Flint, Mich.

PERSISTENT MASTURBATION

To the Editor:—In the case of persistent masturbation discussed in Queries and Minor Notes (THE JOURNAL, April 30) your correspondent is told: "For this type of patient, marriage may be advised as it relieves the tendency to masturbate and would remove temptation of outside coitus with all the serious related possibilities."

This advice raises an important question: Is it ever justifiable to advise marriage as a remedial agent for sexually disturbed men? It is a common practice to recommend marriage in such cases as this, but we must remember that two lives are involved, not only one. Some of

the most tragic cases that have come under my observation have been those in which marriage was prescribed as a cure for sexual dysfunction in men.

With all due respect to the authority who proffered this advice, I believe it is *never* justifiable, either in morals or in law. In the case under discussion, this advice seems particularly open to question, to say the least, first, because the man is a persistent masturbator for the pleasure it gives him and he will probably always prefer this practice to normal coitus; secondly, because he is admittedly more or less impotent.

It is true that he has managed to consummate the sexual act twice in the past six years—hardly enough of an achievement on which to base an estimate of his capacity for normal marriage. If he were not definitely impotent (psychically as well as physically), he would have seized on those two high spots in his sexual life and used them as a stimulus for the further substitution of normal coitus for masturbation. But no, he continued his masturbation, which clearly indicates either that he preferred that practice or that he could not accomplish the other.

In any event, with such definite sexual deficiencies, it is debatable whether marriage can be of any help to him, even though one felt disposed to allow a woman to become the innocent victim of the experiment in the fleeting hope that her physical propinquity might possibly stimulate into activity his latent normal sex powers, if there are any.

There is another thing to be said about this case. It is evident that this man is suffering from chronic seminal vesiculitis. I have seen not a few such cases either greatly improved or altogether cured through Belfield's vasotomy. This should be recommended, in addition to the other treatment, which seems to have helped him somewhat. When the man has been cured of his preference for masturbation and his normal potency has been established beyond question, it will then be in order to consider the advisability of marriage—but not till then.

A. L. WOLBARST, M.D., New York.

Council on Medical Education and Hospitals

COMING EXAMINATIONS

AMERICAN BOARD FOR OPHTHALMIC EXAMINATIONS: Montreal, Sept. 19. Sec., Dr. William H. Wilder, 122 S. Michigan Ave., Chicago.

AMERICAN BOARD OF OTOLARYNGOLOGY: Montreal, Sept. 17. Sec., Dr. W. P. Wherry, 1500 Medical Arts Bldg., Omaha.

CONNECTICUT: *Endorsement.* July 26. Sec., Dr. Thomas P. Murdock, 147 W. Main St., Meriden.

SOUTH DAKOTA: Waubay, July 19. Dir., Dr. H. R. Kenaston, Bonesteel.

New York February Report

Mr. Herbert J. Hamilton, chief, Professional Examinations Bureau, reports the written examination held in Albany, Buffalo, New York and Syracuse, Feb. 1-4, 1932. The examination covered 9 subjects and included 10 questions. An average of 75 per cent was required to pass. One hundred and seventy-three candidates were examined, 119 of whom passed and 54 failed. Eighty candidates were licensed by endorsement from Jan. 1 to May 1, 1932. The following colleges were represented:

College	PASSED Year Grad.	Number Passed
Yale University School of Medicine	(1930)	1
Georgetown University School of Med	(1930, 5), (1931, 5)	10
George Washington Univ. School of Med	(1929), (1931, 3)	4
Howard University School of Medicine	(1931, 2)	2
Northwestern University Medical School	(1931, 2),* (1932)	3
University of Illinois College of Medicine	(1930), (1931)	2
Tulane University of Louisiana Sch. of Med.	(1928), (1931, 2)	3
University of Maryland School of Medicine and College of Physicians and Surgeons	(1931)	1
Boston University School of Medicine	(1931)	1
Harvard University Medical School	(1928)	1
Tufts College Medical School	(1930, 2), (1931, 2)	4
Detroit College of Medicine and Surgery	(1931)	1
St. Louis University School of Medicine	(1931, 3)	3
Washington University School of Medicine	(1929), (1930)	2
University of Nebraska College of Medicine	(1928)	1
Albany Medical College	(1931, 3)	3
Columbia Univ. Coll. of Phys. and Surgs	(1927), (1930, 2)	3
Cornell University Medical College	(1929), (1931, 2)	3
Long Island College of Medicine	(1930, 2), (1931, 4)	6
New York Homeo. Med. College and Flower Hosp	(1931, 3)	3
Syracuse University College of Medicine	(1930, 2), (1931)	3
University and Bellevue Hospital Medical College	(1929),† (1930), (1931, 3)	5
University of Rochester School of Medicine	(1930, 2)	2
University of Oregon Medical School	(1930)	1
Hahnemann Medical Coll. and Hosp. of Philadelphia	(1931)	1
Jefferson Medical College of Philadelphia	(1928), (1929, 2), (1930), (1931)	5
University of Pennsylvania School of Medicine	(1928), (1929, 2), (1930, 2)	5
University of Pittsburgh School of Med	(1928), (1931)	2
Temple University School of Medicine	(1931)	1
Medical College of the State of South Carolina	(1926)	1
Queen's University Faculty of Medicine	(1928), (1930), (1931)	3
University of Toronto Faculty of Med.	(1923), (1928), (1931)	3
University of Western Ontario Medical School	(1928), (1930)	2
McGill University Faculty of Medicine	(1925), (1926), (1927), (1928), (1929), (1930, 3), (1931, 2)	10
University of Vienna Faculty of Medicine	(1930),‡ (1931)	2
Kings College Hospital Med. School, Univ. of London	§	1
Middlesex Hospital Medical School, Univ. of London	§	1
University of Paris Faculty of Medicine	(1930),‡ (1931)‡	2
Queen's University Faculty of Medicine, Ireland	(1929)	1
University of Catania Faculty of Medicine, Italy	(1921)	1
University of Naples Faculty of Med. and Surg	(1931)‡	1
Moscow State University Faculty of Medicine	(1920)	1
University of Edinburgh Faculty of Med	(1931, 4),‡ (1931)	5
Osteopaths		3

College	FAILED Year Grad.	Number Failed
Georgetown University School of Med	(1928), (1931, 2)	3
George Washington University School of Medicine	(1931)	1
Howard University School of Medicine	(1928), (1930)	2
University of Georgia Medical Department	(1929)	1
Loyola University School of Medicine	(1931)	1
University of Louisville School of Medicine	(1926)	1
Boston University School of Medicine	(1928), (1930)	2
St. Louis University School of Medicine	(1930)	1
Creighton University School of Medicine	(1930)	1
Albany Medical College	(1931)	1
Columbia University Coll. of Physicians and Surgeons	(1931)	1
New York Homeo. Med. College and Flower Hosp	(1916)	1
Syracuse University College of Medicine	(1926), (1931)	2
Queen's University Faculty of Medicine	(1930), (1931)	2
McGill University Faculty of Medicine	(1926)	1
Karl Franzens University Faculty of Medicine, Austria (1905), (1931)		2
University of Vienna Faculty of Medicine	(1926, 2)‡	2
Catholic University of Louvain Faculty of Med	(1930)	1
Charles University Faculty of Medicine, Prague	(1931)‡	1
German University of Prague Faculty of Medicine	(1925), (1925),‡ (1929)‡	3
Masaryk University Medical Faculty, Cze	(1928)‡	1
University of Berlin Faculty of Medicine	(1929)	1
University of Freiburg Faculty of Medicine	(1926)	1
University of Jena Faculty of Medicine	(1928)‡	1
Royal Hungarian Francis-Joseph University Faculty of Medicine	(1922)‡	1
University of Genoa Faculty of Med. and Surg., Italy	(1930)‡	1
University of Naples Faculty of Med. and Surgery	(1923),‡ (1923, 2), (1927),‡ (1927)	5
Univ. of Palermo Faculty of Med. and Surg	(1928),‡ (1928)	2
Univ. of Rome Faculty of Med. and Surg	(1928),‡ (1931)‡	2
University of Cluj Faculty of Medicine	(1926)	1
University of Saratov Faculty of Medicine	(1922)‡	1
University of Berne Faculty of Med., Switz	(1926),‡ (1931)‡	2
Osteopaths		5

College	LICENSED BY ENDORSEMENT Year Grad.	Endorsement of
Yale University School of Medicine	(1930)	N. B. M. Ex.
Georgetown University School of Medicine	(1931)	Maryland
Bennett Medical College, Chicago	(1913)	N. Carolina
Rush Medical College	(1929)	N. B. M. Ex.
University of Indianapolis Medical Department	(1897)	Florida
University of Louisville School of Medicine	(1924)	Kentucky
College of Physicians and Surgeons of Baltimore	(1902)	New Jersey
Johns Hopkins University School of Medicine	(1923) (1924), (1927)	N.B.M.Ex., Maryland
University of Maryland School of Medicine and College of Physicians and Surgeons	(1924), (1930)	Maryland
Harvard University Medical School	(1928), (1929)	N. B. M. Ex.
Tufts College Medical School	(1905), (1907)	Mass., (1925) Maine
University of Michigan Medical School	(1916) (1930)	Michigan, N. B. M. Ex.
University of Minnesota Medical School	(1929)	Minnesota
Washington University School of Medicine	(1929)	Maryland
Creighton University School of Medicine	(1929)	California
Columbia University College of Physicians and Surgeons	(1927), (1928), (1930, 2)	N. B. M. Ex.
Cornell University Med. College	(1922), (1929), (1930)	N. B. M. Ex.
Syracuse University College of Medicine	(1930)	N. Carolina
University of Buffalo School of Medicine	(1885)	Diploma
University of Rochester School of Medicine	(1929), (1930)	N. B. M. Ex.
Ohio State University College of Medicine	(1925)	Ohio
Western Reserve Univ. Sch. of Med.	(1924), (1929), (1930, 2)	Ohio
Hahnemann Med. Coll. and Hosp. of Philadelphia	(1931, 2)	Maryland
Jefferson Medical College of Philadelphia	(1899)	Penna.
Medico-Chirurgical College of Philadelphia	(1906)	Penna.
University of Pittsburgh School of Medicine	(1911)	Penna.
Woman's Medical College of Pennsylvania	(1920)	N. B. M. Ex.
Medical College of the State of South Carolina	(1915)	N. Carolina
University of Tennessee College of Med	(1930, 2), (1931)	Tennessee
Baylor University College of Med	(1924), (1926), (1929)	Texas
University of Vermont College of Medicine	(1930, 2)	N. B. M. Ex.
Medical College of Virginia	(1926), (1928), (1929)	Virginia
University of Virginia Department of Medicine	(1926)	Virginia
University of Toronto Faculty of Medicine	(1923) (1926)	Ontario, New Jersey
Laval University Faculty of Medicine	(1931)	Tennessee
McGill University Faculty of Medicine	(1928) (1928), (1930, 2)	Maryland, N. B. M. Ex.
University of Vienna Faculty of Medicine	(1916)‡	Diploma
University of Berlin Faculty of Medicine	(1923)‡ (1925)‡	Illinois, Germany
University of Wurzburg Faculty of Medicine	(1921)	Maryland
Royal Hungarian Univ. of Science	(1914),‡ (1919),‡ (1925)	Diploma
University of Bologna Faculty of Med. and Surg	(1930)	Utah
University of Naples Faculty of Med. and Surg	(1921)	New Jersey
University of Rome Faculty of Med. and Surg	(1916)	Penna.
State University of Kazan Faculty of Medicine, U. S. S. R.	(1910)‡ Diploma, (1907)	Turkey
American University of Beirut School of Medicine	(1912)	Syria
Osteopaths		New Jersey, 3

* One of these applicants has received an M.B. degree and will receive an M.D. degree on completion of an internship.

† License withheld for evidence of citizenship.

‡ Verification of graduation in process.

§ These applicants completed their medical course in their respective colleges in 1931.

Medical Economics

AN EXPERIMENT IN COLLECTIVE MEDICAL SERVICE

Results of the First Year of Operation of the Bassett Hospital Annual Payment Plan

G. M. MACKENZIE, M.D.; MARJORIE F. MURRAY, M.D., AND MONROE A. MCIVER, M.D.
COOPERSTOWN, N. Y.

Many traditions apparently firmly rooted in our prewar social organization have been critically scrutinized, attacked, modified or abandoned during the last fifteen years. That the established relationship of the medical profession to the public is one of the institutions that are being subjected to reexamination and criticism is quite clear. The large number of contributions to various phases of this subject in both lay and medical periodicals indicates a widespread and increasing interest in the economic and social implications of medical practice.

Aware of this situation and stimulated by the frequent observation locally of families in the lower economic groups faced with embarrassing indebtedness because of the unavoidably high cost of essential diagnostic and therapeutic procedures, the Mary Imogene Bassett Hospital, at Cooperstown, N. Y., started on Jan. 1, 1931, a small experiment involving the principle of voluntary sickness insurance. In common with the numerous compulsory and voluntary sickness insurance schemes that have been in operation in Europe for many years, the basic idea was to distribute the cost of sickness evenly throughout a group, the individual members of which would require, during the term of insurance, varying amounts of medical attention. In contrast with nearly all the sickness insurance schemes that have been tried, the organization and operation of the Bassett Hospital Annual Payment Plan has been under the direction of a group of physicians. The element of outside official domination by state, municipality or insurance company has been completely absent in this scheme. It is entirely a physicians' undertaking.

THE MILIEU, PROFESSIONAL PERSONNEL AND MEDICAL FACILITIES

Cooperstown is a rural community in Otsego County, N. Y., with a population of 2,909; within a radius of 5 miles there are approximately 2,000 more inhabitants. This group of 5,000 people is composed of farmers, shopkeepers, clerks, skilled mechanics, unskilled laborers, employees of various types, and a few professional men and women. A very small percentage of the population is foreign born. During the summer there is an influx of perhaps 400 to 600 summer residents. The poor people of urban communities with access to low cost dispensaries and wards in city hospitals have far greater opportunities for medical and surgical care at minimal or no expense than the poor of such a rural district as Otsego County. The disadvantage in which individuals in the dispensary and ward-patient groups are placed in rural communities, as compared with a similar economic group in metropolitan areas, was one of the considerations which led to this experiment with the Annual Payment Plan.

The Mary Imogene Bassett Hospital consists of a group of four stone buildings with beds for eighty patients. It is equipped to do nearly all the modern diagnostic and therapeutic procedures, including electrocardiography, basal metabolic rate determination, x-ray diagnosis and therapy, radium treatment and physical therapy, and has laboratories for bacteriology, serology, pathology and biologic chemistry. The staff consists of nine physicians and surgeons, all of whom are on a salary basis, and all have their offices in the hospital. Fees for professional services, either in the hospital or at the patient's home, are collected by the hospital. Three interns, thirty graduate nurses and six laboratory assistants complete the professional personnel. It is a non-profit-making institution, enabled to operate with a deficit because of the generous philanthropy of a resident of Cooperstown. Two physicians not on the hospital staff have their offices in Cooperstown and carry on practices in the village and vicinity. One of these physicians, previously on the hospital staff, resigned his position at the hospital and opened an office for independent practice after the Annual Payment Plan had started. Thus, 90 per cent of the physicians of Cooperstown were on the hospital staff in January, 1931. The work involved in the operation of the Annual Payment Plan constitutes only a small fraction of the medical and surgical activities of the hospital.

PROVISIONS OF THE ANNUAL PAYMENT PLAN

The charges for membership are $25 a year for an individual, and $100 for an entire family of any size. Membership dues may be paid in monthly instalments. In return for this the hospital, through its staff, undertakes, in addition to an annual physical examination, to take care of the members of the Annual Payment Plan in case of any illness, either medical or surgical, without additional charge. The service includes physician's attendance, surgical operations, x-rays, laboratory examinations, ambulance service and medicines, except those administered over long periods of time, such as insulin, arsphenamine and liver extract. In case of admission to the hospital, ward service is provided; if a member of the Annual Payment Plan on admission to the hospital desires a private room, he is allowed a credit of $4 a day; with this deduction the charges for private room service, operations, laboratory examinations and professional fees are computed as for nonmembers. A prolonged illness involves no additional expense for the member up to the date of expiration of his membership. So far as practicable, and in conformity with the departmental organization of the hospital, a member of the Annual Payment Plan may select from the hospital staff the physician whom he prefers. The hospital, through its professional staff, reserves the privilege of deciding whether an illness is to be treated at the patient's home, in the outpatient offices of the hospital, or in a ward of the hospital. Obstetric cases are not included in the Annual Payment Plan service.

COMPOSITION OF THE MEMBERSHIP

In January, 1931, 182 applicants had been accepted for membership. In order to keep the number of members as nearly constant as possible throughout the year, no applicants were accepted after January. Of the 182 accepted applicants, 8 failed to make any payments and were therefore dropped after the first month. During the year 13 members, for various reasons, financial and other, failed to keep up their payments. There were thus 174 members who started and 161 members who continued through a full year. As it was desired not to make the standards of health required for admission too high, a number of applicants with known pathologic conditions were accepted. These were as follows: 16 individuals with hypertension, 3 with marked obesity, and 1 each with tuberculosis of the cervical lymph nodes, hypothyroidism, colloid goiter, secondary anemia, peripheral neuritis, chronic nasopharyngitis, fibromyoma of the uterus, diabetes, postencephalitic syndrome, chronic prostatitis, and rheumatic heart disease. Ten persons with pathologic conditions were accepted with the understanding that medical care for these conditions would not be included in the services under the Annual Payment Plan, but that

While this report is submitted by three members of the staff of the Mary Imogene Bassett Hospital, the entire staff participated in planning and carrying on the Annual Payment Plan. Miss K. M. Danner, superintendent of the hospital, and Miss Florence Saenger, secretary of the Annual Payment Plan, rendered invaluable service in the administrative work.

everything else would be treated without any charge in addition to the membership fee; this group includes one case each of chronic eczema, hernia, varicose veins, acne vulgaris, chronic arthritis, and deviated nasal septum, and four children needing tonsillectomies.

With regard to economic status, the group was not homogeneous. A large percentage of the members were wage earners with small incomes, school teachers, and elderly people living on small savings; the undertaking was planned primarily for this group of people; a small percentage of the members would

TABLE 1.—*Membership and Cost of Service by Age Groups*

1	2	3	4	5	6	7	8	9
			Percentage Composition of Whole Population (U. S. Census 1930)					
Age Groups in Years	Number of Members	Percentage Composition of Membership	Cooperstown Village	Otsego County	Cost of Service	Percentage Cost of Service	Number of Members Not Using Service	Number of Members Exceeding $25 Service
1- 4	9	**5.2**	5.6	7.3	$ 234.50	**5.8**	2	4
5-14	32	**18.3**	13.0	16.7	1,055.25	**26.2**	11	11
15-24	27	**15.5**	17.9	14.6	391.10	**9.7**	9	5
25-34	16	**9.2**	13.6	12.8	565.25	**14.0**	5	3
35-44	40	**23.0**	12.5	13.4	598.75	**14.8**	8	8
45-64	44	**25.3**	26.7	23.7	1,080.75	**26.8**	17	7
65-over	6	**3.5**	10.7	11.5	111.75	**2.7**	1	1
Totals	174				$4,037.35		53* (30.6%)	39 (22.4%)

* Nine of these members did not complete payments.

be classed as economically in the middle class. Included in the membership there were thirty-eight persons whose memberships were paid for in full and twenty-five persons whose memberships were paid for in part, by employers or by philanthropic citizens. Among these members whose dues were paid by others there were a number of persons who, in case of illness, would have been cared for by the staff of the hospital but who would have been able to pay little or nothing. Lack of information on their financial resources makes it impossible to give exact figures for this group which would have been partially or wholly dependent on charity, but presumably from fifteen to twenty of these members would have been, in case of illness, to some extent dependent on charity.

The distribution of the membership by age groups is shown in columns 2 and 3 of table 1. For comparison, the percentage composition of the population of Cooperstown and Otsego County in the different age groups is shown in columns 4 and 5. These figures are taken from the U. S. census of 1930. It will be seen that the membership was overweighted in the 5-14 and 35-44 age groups, and underweighted in the 25-34 and the over-65 age groups. In the other age groups the percentage figures for the membership were close to those of the whole population of the community.

The community received information of the plan first by the personal contacts of members of the hospital staff; then at meetings of the Rotary and Exchange clubs short addresses outlining the provisions of the Annual Payment Plan were made by members of the staff. The local papers reported the substance of the addresses and soon the facts were spread about the community. A representative of the hospital called on people said to be interested and offered to give any additional information desired. This representative was careful to state that the hospital did not wish to take as members those who were regular patients of physicians not on the hospital staff, and studiously avoided anything which might be called salesmanship. Following the publication of the news story in the local papers, newspapers throughout the United States received the story from the Associated Press and many of them printed brief accounts of the Annual Payment Plan. A leaflet stating the provisions of the plan was printed and sent to those whose names had been suggested as people who wished detailed information.

AMOUNT AND COST OF SERVICES RENDERED TO MEMBERS OF THE ANNUAL PAYMENT PLAN

In computing the value of services rendered to members of the Annual Payment Plan, the rates prevailing in the community for house and office calls were used. No schedule of fees has been adopted by the county medical society, but the prevailing charges may be stated to be approximately as follows: house and office calls, from $2 up; night calls, $1 additional; out-of-town calls, 50 cents a mile additional. The ward rate of the hospital is $4 a day, with an extra charge only for surgical operations. Fifty-three members (30.6 per cent) had no medical or surgical service during the year. The distribution by age groups of these nonusers is shown in column 8 of table 1. But in this group there were nine persons who dropped out during the year, leaving forty-four (27.3 per cent) members who completed the year without any medical attention. There were thirty-nine members who received medical attention for which they would have been charged more than $25 if they had not been members. The distribution of these members by ages is shown in column 9 of table 1. In columns 6 and 7 of table 1, figures are given by age groups for the cost of services rendered and the percentage for each age group of the total cost of services rendered. These figures show that the 5-14 group was the most costly one to carry. It constituted 18.3 per cent of the membership, and the services rendered to it amounted to 26.2 per cent of the total. The 35-44 group, on the other hand, constituted 23 per cent of the membership and received only 14.8 per cent of the medical services rendered.

During the year the members made 560 calls at the doctors' offices in the hospital, and there were 115 visits by doctors at the patients' homes. There were 381 patient-days for those admitted to the hospital. The computation of the cost of the outpatient work and medical service rendered to inpatients is shown in table 2.

Thus, the total amount that would have been charged for the professional services rendered if the patients had not been members of the Annual Payment Plan would have been $4,037.35. To this should be added, in order to determine the total cost of operating the undertaking, $310 for postage, stationery and secretarial service, and $305 for the admission examinations. Since many of the applicants had recently been patients of members of the hospital staff, the amount of work involved and therefore the amount chargeable against the operating expense of the Annual Payment Plan was less than it would have been if all the applicants had required complete examinations. A proportion of the administrative expense—impossible to calculate accurately—is a nonrecurring expense, occurring only during the first year of operation. The total cost of professional services of all kinds and administrative work, therefore, came to $4,652.35. Against this the total receipts were $3,856.50, which sum was added to the general hospital fund.

TABLE 2.—*Cost of Service Rendered*

Outpatient Service:		
Professional fees	$1,610.00	
Pharmacy	42.40	
Laboratory	145.00	
Diathermy, massage, etc.	80.95	
X-rays	177.00	
Radium treatment	40.00	
		$2,095.35
Inpatient Hospital Service:		
Professional fees	$ 714.00	
Room and board (including laboratory, x-ray and pharmacy charges)	1,143.00	
Operating room	85.00	
		1,942.00
		$4,037.35

In computing the cost of operating the Annual Payment Plan, no allowance has been made for bills that would not have been paid. It has been figured as though collections would have been 100 per cent of bills rendered. As the hospital has never for a year averaged more than 75 per cent collections, a deduction of 25 per cent should be made from the figure representing the cost of professional services rendered to members. This deduction amounts to $1,009.34. Among the members there were a number of nearly destitute persons and families whose memberships were paid for by others. In case of illness, some of these poor people would have been ineligible for county aid and would have been cared for by the hospital without any charge. Without making any allowance in comparing the two sides of the ledger for this indeterminate factor, the financial aspect of the experiment may be summarized as in table 3.

TABLE 3.—*Financial Aspect of Annual Payment Plan*

Total receipts from membership dues		$3,856.50
Service rendered	$4,037.35	
Less 25%, bills uncollectable	1,009.34	
		$3,028.01
Administrative expense	615.00	
		3,643.01

THE DOCTOR-PATIENT RELATIONSHIP; ATTITUDE OF MEMBERS

An argument that has been advanced against the organization of medical practice along the lines of this experiment is that patients will make unreasonable demands on the physician if no extra expense is involved. It has been said that the doctor would be summoned at night or at other inconvenient hours when the patient could easily come to the office during office hours, and that patients would demand admission to the hospital when admission was unnecessary. The experience of one year with this particular group of individuals on an annual payment basis has falsified these predictions. In no instance has the patient made unreasonable demands or attempted to "get his money's worth" when no medical attention was necessary. The physicians on the hospital staff are unanimously of the opinion that there has been excellent cooperation on the part of all the members. Possibly, because it involved no additional expense for the patients, the doctors made a few more visits than they would have made for the same illnesses of nonmembers. That the members feel satisfied with the relationship is shown by the response to a questionnaire that was sent to all the members after the scheme had been in operation ten months. Not only was there no expression of dissatisfaction among the 162 replies received, but nearly all the members wrote that they considered it highly satisfactory. One hundred and thirty-eight reported a desire to renew their memberships; of those who did not wish to continue their memberships, seven had moved away from Cooperstown, eight were undecided because of finances, four preferred commercial sickness insurance—these were all part-time residents of Cooperstown—and one family of five preferred to be cared for by a physician not on the hospital staff.

CONCLUSIONS

It is not our purpose in this paper to argue for or against the organization of medical practice on an annual payment basis. We are fully aware of the multiplicity of factors—psychologic, economic, social, personal—involved in the relationships of the medical profession to the public. We have merely recorded certain facts which have come out of the first year of operation of a small undertaking in collective medical service carried on in a rural community in New York State. They apply only to a particular group of individuals and a particular group of doctors, working under a particular set of conditions which are far from typical.

Book Notices

The Technique of the Non-Padded Plaster Cast. By Fritz Schnek, M.D., First Assistant at the Accident Insurance Hospital in Vienna. With a preface by Lorenz Böhler, M.D., Director of the Accident Insurance Hospital in Vienna. Authorized English translation by Douglas D. Toffelmier, M.D. Cloth. Price, $5. Pp. 139, with 169 illustrations. Vienna: Wilhelm Maudrich, 1932.

For many years the author of this book has been first assistant to Prof. Lorenz Böhler, who popularized the method of treating fractures by reduction under local anesthesia and the immediate application of a nonpadded cast. In the preface, Böhler emphasizes the fact that the treatment of any fracture has two constant requirements; namely, good reduction and uninterrupted fixation until bony union takes place. He explains that many of the poor results that have occurred in the treatment of fractures were due to the fact that casts were applied on limbs with poorly reduced fractures and that faulty technic in the application permitted the fragments to slip, resulting in serious deformities. Schnek considers plaster of paris the best and least expensive material for splinting fractures because of ease of application and stability. The translator worked with the author for two years at the hospital and was therefore able to observe and learn the technic, a description of which he was called on to translate. This is an unusual situation, because most translators perform this work mechanically.

All fractures should be subjected to the roentgen ray immediately after reduction. The strength of the rays should be increased about 10 per cent and the exposure 50 per cent longer than usual when they must penetrate a cast. The nonpadded cast allows for a more even shadow of the bones and soft structures than does the padded cast. Schnek uses a thermophore or a hot-air box on the drying cast. While a cast is hardening it is often allowed to rest on a hard substance, such as the operating table or a chair, thereby causing an indentation which may be harmful.

One of the criticisms of the nonpadded cast concerns the patient's hair. The hair caught in the plaster dies in about three weeks and pulls out of the skin easily. The skin, instead of being bald when the cast is removed, is covered by a new growth of fine, downy hair, which is not adherent to the cast. It is easier to remove a nonpadded cast than one of the padded variety and it is not necessary to wet the cast with water or vinegar. If a cast is causing pressure, removal of all constrictions should restore normal circulation in about ten minutes.

The term "window edema" is used for the condition of swelling that develops through the window trimmed out of a cast. The edema is caused by internal edema of the soft parts pushing the muscles and skin out through the window, where the external pressure has been removed, causing a local edema of the skin. Enlarging the window will not remedy this condition; one must restore the external pressures.

In using plaster cast treatment, the physician is obligated to care for the patient from the time of its application until the time of its removal. All correction of position should be accomplished before the plaster has hardened, to prevent wrinkles on the inside of the cast. This is illustrated clearly by line drawings.

The author defines the duties that plaster casts are called on to perform; viz., general fixation of a portion of the body, maintenance of a definite position of certain parts of a limb, elimination of undesirable muscle movements and stresses, protection of the soft parts involved, aid in the final fixation of the part, and immobilization of infected or clean wounds. He emphasizes the importance of immobilizing the joints above and below an infected region. He quotes Böhler's first law of functional treatment as follows: "Continuous, never interrupted immobilization of all fractured or infected parts, including those adjacent to those joints capable of much movement, is necessary to avoid pain." The two facts that apparently make the padding of a cast necessary are (1) pressure disturbances of the skin and (2) circulatory disturbances. The most striking point in favor of the nonpadded cast is its ability to maintain the fragments in position and allow an early discharge of the patient.

Schnek describes the preparation of a plaster bandage. He uses the plaster splint, reinforcement or "reverse" as the basis of most casts because it can be molded easily to the contour of the part and because it adds greatly to the strength of the cast. The skin is not oiled or shaven. He warns against the danger of circulatory disturbances produced by plaster of paris. The surgeon is responsible for the patient from the time he applies the cast until he removes it. He cautions interns and nurses to be on guard continually for various signs and symptoms of trouble, such as change in color, swelling mobility, sensation and pain. In doubtful cases, the cast should be split or removed immediately. Regardless of the skill and training of the surgeon and assistant, the fresh fracture cases should be seen twice daily. The night nurse should be especially instructed and warned of the danger of negligence. The physician is responsible in court for all surgical accidents.

The dorsum of the toes must remain uncovered to allow their free movement and so that they can be readily observed for circulatory disturbances. A perfectly fitted cast never causes discomfort or pain; hence all complaints should be investigated immediately, windows cut, and pressure restored.

The knee joints should always be fixed in extension, because it is only in this position that the quadriceps muscle can be active and not undergo atrophy.

Schnek advises against the mistake of immobilizing fractures in an overcorrected position. He describes the method of wedging casts to correct the angulation of fragments. Making a walking cast too short is one of the most frequent errors made. It is wiser for the operator himself to hold the leg and allow the assistant to apply the cast. Extension or traction must be maintained until the cast has set. He emphasizes, in hand casts, the importance of free extension and abduction of the thumb and allowing complete flexion of the metacarpophalangeal joint of the little finger. The proximal finger joint should never be held in overextension.

Schnek omits a description of a cast to immobilize the shoulder girdle or shoulder joint because such a cast is of little or no value. He advises an airplane splint either factory made or constructed of Cramer wire by the operator.

Volkmann's ischemic paralysis, he explains, is produced as follows: The arm is markedly shortened and the proximal fragment of the humerus is dislocated anteriorly. The lower jagged edge of the proximal fragment compresses the brachial artery and vein against either of the distal fragments of the forearm bones. At times, the vessels may even be severed by the edge of the humerus. If reduction is attempted by acute flexion at the elbow without longitudinal traction, blood vessels and nerves will be compressed, and ischemia or even gangrene may result even though no cast is applied. If the reduction is accomplished with longitudinal traction on the humerus with the elbow held at a right angle, the vessels will be relieved of compression and normal circulation will be quickly reestablished. A cast applied at this time affords danger other than that attending the treatment of any fracture. The fingers must be watched for cyanosis and secondary swelling of the forearm, and the cast must be split as usual to control it. Volkmann's ischemic palsy, he says, never follows any but a supracondylar fracture and is rarely found following other elbow injuries. In the treatment of flatfoot, in which there is a supination contraction of the forefoot, the forefoot must be pronated in relation to the heel; at the same time it must be slightly adducted.

The exposition is clear and concise. There is much repetition, but it is desirable. In the preface by the translator and the foreword by the author, there are several points of information. The illustrations are mostly reproductions of photographs and diagrams of plaster casts and plaster technic. The author illustrates proper and improper methods. There are many errors in translation, but one overlooks these because the book was written in German and translated and edited in Austria. Regardless of whether the surgeon uses the nonpadded plaster cast or not, the book contains so much good information that it is well worth reading. It should be of value to every general, industrial and orthopedic surgeon and to the nurses and interns connected with hospitals where plaster of paris is used.

What the Public Should Know About Childbirth. By Walker Bourne Gossett, M.D. Cloth. Price, $2. Pp. 290. Minneapolis: Midwest Company, 1931.

This book is introduced with the statement: "This book . . . is a direct result of a paper sometime read by the author . . . on "Problems Pertaining to Obstetrical Practise in Catholic Hospitals." The author has incorporated in the book a chapter on this subject, perhaps the original article itself. Most of the book consists of rather long excerpts from articles written by the leading and lesser obstetric teachers in the country, but there are also citations from Arthur Brisbane and the Chicago *Tribune*. Chapter IX is a complete reprint of an article devoted to frontier nursing. There are two reasons why the book may lead to harm. The outside cover and almost all of the first sixty-three pages repeat the gross falsehood that "the United States is behind at least twenty other countries in its efficiency in the prevention of maternity deaths." That obstetrics in this country can and should be vastly improved is accepted by all, and this statement should be emphasized at every opportunity; but that our maternal death rate is so much higher than it is in countries whose vital statistics are either inaccurate or incomplete is absolutely not true. The author would do well to read Haven Emerson's article entitled "Factors Leading to Misinterpretation of Maternal Mortality Rates" in the April issue of the *American Journal of Obstetrics and Gynecology*.

The second source of harm is the author's insistence that obstetrics should be divorced from gynecology and that cesarean sections should not be performed by obstetricians but by general surgeons. In support of his argument he quotes the following statement from the late Dr. Williams: "One of my former assistants . . . informed me that last year in one of the hospitals in Houston, Texas, 102 cesarean sections were performed. Fifty-two were done by various members of the staff with 18 deaths as compared with 50 performed by himself and his partner with a single death, a mortality of 35 and 2 per cent, respectively." What Gossett does not mention, however, is that the 35 per cent mortality occurred in the hands of recognized surgeons and physicians, whereas the low death rate occurred in the practice of those who specialized in obstetrics. Is any further argument necessary? Gossett also makes the statement that "an obstetrician in his own private practice does not see enough cases that will demand a cesarean section." This surely is a strange sentence when one recalls the large series of cesarean sections reported by Williams, De Lee, Greenhill, Phaneuf and others. It is true that the private practice of these individuals was greatly supplemented by their ward services; but such experience is necessary for all authorities in all branches of medicine.

The material in this book could easily have been condensed into one-fourth the number of pages or less. Parts of the book were more properly written for physicians than for laymen, as for example the chapter on Catholic hospitals. The author misinforms his public when he states that "the sex of the child is already determined in the ova (eggs) in the ovaries of the girl, even before puberty. . . . It is a matter of Providence whether a male or a female ovum (egg) is the one fertilized by the male element." The accepted belief today is that, in human beings, ova are of one kind, whereas the spermatoza determine whether a child is to be a male or a female. When a spermatozoid with twenty-four chromosomes fertilizes an ovum, the child will be a female; whereas when a spermatozoid with twenty-three chromosomes fertilizes an ovum, a male will result.

Urine Analysis. By Byomkes Das Gupta, Bengal Medical Service. Cloth. Price, Rs. 3; 5/-. Pp. 141, with illustrations. London and Calcutta: Butterworth & Company, Ltd., 1932.

The author has been a teacher of medical students. This little volume represents the notes which he has given in lectures and demonstrations to the students on the subject of urine analysis. It was prepared in book form at the request of former students, who desired to have these notes in a handy form to use in practice. The chapters are on physical examination, chemical examination, microscopic examination and special examination. The last chapter, which is brief, takes up four special urine tests. There is an appendix in which the formulas are given for the various reagents used in urine analysis.

A Comparative Study of a Nursery-School Versus a Non-Nursery-School Group. By Ethel Kawin and Carolyn Hoefer. Assisted by Edna Mohr, Maria G. Linder and Marian W. Taylor. Based upon studies made by the Elizabeth McCormick Memorial Fund and the Institute for Juvenile Research assisted by the Behavior Research Fund. Paper. Price, 75 cents. Pp. 52. Chicago: University of Chicago Press, 1931.

The object of this study was to determine whether or not there are measurable differences in growth and development between children 2 and 3 years of age attending nursery schools and children of the same age who do not attend such schools. Psychologic tests, medical examinations and home observations of the children were carried out, while a social history, including a record of environmental factors regarding the home and family life, were obtained. As a result of this study it was found that, so far as physical growth was concerned, the two groups were about equal. Nor was there any marked difference between the nursery school group and the other children in mental growth. However, the nursery school children seemed to show improvement through the elimination of undesirable habits and the acquiring of more good habits. This study is too limited to allow definite conclusions to be drawn as to the results of nursery school training. The workers point out that it is merely a preliminary report to be used in formulating a larger research project.

Électrocardiographie clinique. Par Pierre-Noël Deschamps, médecin-assistant du service de cardiologie à l'Hôpital Lariboisière. Préface du Professeur A. Clerc. Paper. Price, 30 francs. Pp. 192, with 75 illustrations. Paris: Masson & Cie, 1932.

The author is an assistant to Professor Clerc, a recognized authority on electrocardiography in France. The work is a detailed presentation of clinical electrocardiography, tersely written and logically arranged. The experimental basis of the subject is discussed. There is a correlation of electrocardiographic observations with the symptomatology and basic pathology of the various conditions in which graphic methods are of importance in diagnosis, prognosis or treatment. Chapters discussing the value of electrocardiography in prognosis and in the management of acute infections, including acute rheumatic fever, diphtheria and scarlet fever, add materially to the value of the work. The book is well illustrated, most of the illustrations having been taken from more exhaustive publications by Professor Clerc. A carefully selected bibliography is attached, which includes the more important contributions on the subject and gives full recognition to American workers in this field of research. Whereas authorities may find certain statements at variance with their opinions, the clinician who reads French will find here a wealth of dependable information on clinical electrocardiography, which is unusually well presented. The work is a valuable handbook on the subject.

Biochemistry in Internal Medicine. By Max Trumper, Ph.D., Clinical Chemist and Toxicologist, and Abraham Cantarow, M.D., Instructor in Medicine, Jefferson Medical College. With a foreword by Elmer H. Funk, M.D., Sutherland M. Prevost Professor of Therapeutics at Jefferson Medical College. Cloth. Price, $5.50. Pp. 454, with 11 illustrations. Philadelphia & London: W. B. Saunders Company, 1932.

Modern medicine is so complex that the student can digest and use only a fraction of the subjects in the curriculum. Should he possess the ability to retain much of what is taught, it is highly improbable that he would possess also other qualifications that go to make the successful practitioner. For the sane and successful practitioner, dependence must be placed on the average student. Sane and practical training, therefore, should be available for his development. This can be accomplished only by avoiding unnecessary details and emphasizing fundamental principles. With a clear realization of these conditions in mind, the authors have endeavored to bridge the gap between the laboratory and the clinic, and to emphasize the important fundamentals of biologic chemistry as they apply to the practice of medicine. In doing this they have made an excellent selection of subjects and have presented it accurately and clearly. They discuss those parts of biochemistry of value in diagnosis and explain the basis for the tests used. The main subjects discussed are carbohydrate metabolism, with especial emphasis on diabetes; protein metabolism, with emphasis on its significance in nephritis, eclampsia and gout; cholesterol metabolism; chloride, calcium and phosphate metabolism; acid-base balance; basal metabolism; renal and liver functional tests; gastric function and tests; pancreatic function; cerebrospinal fluid and miscellaneous urinary observations. All subjects are treated adequately and clearly, and the meaning of each test is explained so lucidly that the reader may easily obtain an understanding of the chemical changes responsible for the symptoms. The great service of biochemistry to internal medicine is so well presented that it does credit to both these subjects.

Anatomie élémentaire des centres nerveux et du sympathique chez l'homme: Vie de relation et vie végétative. Par P. Gilis, professeur d'anatomie à la Faculté de médecine de Montpellier. Second edition revised by J. Euzière, professeur de clinique des maladies mentales et nerveuses à la Faculté de médecine de Montpellier. Paper. Price, 24 francs. Pp. 234, with 37 illustrations. Paris: Masson & Cie, 1932.

This is a small compendium of elementary facts concerning the central nervous system and the sympathetic system. It cannot be used for either a text or a reference book but might serve the purposes of a student who wishes a bird's eye view of neuro-anatomy.

The Principles of Physical Education. By Jesse Feiring Williams, A.B., M.D., Professor of Physical Education, Teachers College, Columbia University. Second edition. Cloth. Price, $3. Pp. 468, with illustrations. Philadelphia and London: W. B. Saunders Company, 1932.

The second edition of this work has brought it down to date as to facts, tests and figures, but it remains essentially the same as the former edition, a logical, intelligent presentation of the development of a physical education program, the reasons for it, the nature of it, its proper objectives, and its place in the general educational plan. Some would feel that Dr. Williams, in his eagerness to emphasize the value of large muscle activities in education, needlessly minimizes the health values of these activities. No one will feel that he lacks background in the understanding of general educational problems and philosophy of life, or specific knowledge of the history and present status of physical education and its procedures. The book is valuable not only for students and teachers of physical education but also for general educators and school administrators, who should be intelligent about the integration of all organized educational efforts.

Über die neuere Entwicklung der chirurgischen Behandlung der Lungentuberkulose. Von Professor Dr. R. Nissen. Mit einem Geleitwort von F. Sauerbruch. Paper. Price, 6 marks. Pp. 16, with 85 illustrations. Berlin: Urban & Schwarzenberg, 1932.

This monograph from Sauerbruch's clinic deals with the latest developments in the surgical treatment of pulmonary tuberculosis. The indications for and limitations of intrapleural pneumolysis, partial thoracoplasty, and especially plombage, are discussed in relation to partial pneumothorax collapse, to paralysis of the diaphragm by phrenic neurectomy, and to the posterior and combined posterior and anterolateral extrapleural thoracoplasty. Extrapleural pneumothorax following pneumolysis is discussed and the treatment of secondarily infected tuberculous empyema briefly outlined. A test of cardiac function by having the patient breathe air under positive and under negative tension is referred to; mediastinal flutter and wound infection are briefly discussed as the most serious postoperative complications. A short table on end-results is included. The author states that improved technic and clearer cut indications will extend the usefulness of all accepted methods and will prevent failures that result from their improper or incomplete application. The monograph is recommended to all interested in the treatment of pulmonary tuberculosis.

An Elementary Manual of Physiology for Colleges, Schools of Nursing, of Physical Education and of the Practical Arts. By Russell Burton-Opitz, S.M., M.D., Ph.D., Attending Cardiologist, Lenox Hill Hospital, New York. Fourth edition. Cloth. Price, $2.50. Pp. 419, with 147 illustrations. Philadelphia and London: W. B. Saunders Company, 1932.

The publisher advertises that in this edition the author "brought his text immediately up to date, adding much new material." A perusal of the volume revealed that, in addition to two minor changes elsewhere, only one chapter had been revised—the one dealing with the internal secretions. But even this chapter has scarcely been brought up to date, as shown by the retention of the statement that the chief function of the suprarenal glands is to produce epinephrine. The good features of the book have been retained, as there are practically no differences between the successive editions.

Medicolegal

Implied Consent to Examination and Treatment

(Baxter v. Snow (Utah), 2 P. (2d) 257)

Baxter discovered that he did not hear well through his left ear. He was treated by the defendant, an otologist. Subsequently he attributed deafness in that ear to the treatment administered and sued for damages for alleged malpractice. He alleged that he went to the defendant to have wax removed from his ear and instructed the physician to remove the wax and to do nothing more. The physician, however, not only removed some wax, but, finding the drum diseased, he cleansed the ear and inserted a cotton pledget dipped in ichthyol. Baxter alleged that in the course of this treatment a eustachian catheter was passed and that after the catheter was removed he complained to the physician that he, the physician, had made him deaf. He continued under treatment, however, for some time thereafter. The physician testified that during Baxter's first visit he did not use a catheter. The jury rendered a verdict in favor of the patient, and the defendant-physician appealed to the Supreme Court of Utah.

Although the patient alleged in his bill of complaint that he asked the defendant-physician to see only if he had wax in his ear and to remove it and that he instructed him to do nothing more, he did not testify in the course of the trial to the giving of any such instructions. Had he undertaken to direct his physician as to the kind of diagnosis to be made or the manner of making it, or as to the treatment to be given or prescribed, it is likely that his physician—or any other reputable, competent, skilful physician under like circumstances—would have declined to have anything to do with the case. Where, as in this case, a patient who finds difficulty in hearing goes to a physician to ascertain the cause and voluntarily submits to treatment by that physician with full knowledge of what the physician is doing, and acquiesces and consents to all that the physician does, he clearly by implication authorizes the physician to diagnose the case, to discover for himself the cause of his patient's disability, and to give such treatment as in the judgment of the physician is reasonably necessary. Although the patient may have believed that his disability was due to an accumulation of wax in his ear, that belief on his part did not relieve the physician of the obligation to discover the true cause of the disability that he was called on to remedy. Where one has voluntarily submitted himself to a physician for diagnosis and treatment, it will be presumed, in the absence of evidence to the contrary, that what the physician did was either expressly or by implication authorized.

The gravamen of this action, said the Supreme Court, was negligence. No attempt was made by the patient or by any other witness to explain how the plaintiff's hearing could have been or was destroyed by the use of a eustachian catheter. All that the patient said was that he had hearing in his left ear when he got into the physician's chair, that when the catheter was inserted and removed he felt a change in his hearing, and that thereafter he could not hear through that ear. This, he contended, was prima facie evidence of negligence and cast on the defendant-physician the duty of showing that such impairment of hearing as developed during treatment, if any, was not caused through his fault or neglect. Even if it were assumed, however, that that duty was cast on the defendant-physician, it was fully discharged by his showing the condition of his patient's ear when he first examined it; by showing what he did in diagnosing and treating the case; and by showing indisputably, not only by his own testimony but by that of three skilled otologists, that the instruments employed were standard, suitable and such as were generally used by skilled otologists, and that the use of them, as it was indisputably shown they were used, could not have injuriously effected the patient's hearing. All this being undisputed, the jury was not at liberty to disregard it and to render a verdict contrary to it or based on surmise or conjecture. In some cases the opinions expressed by experts are not necessarily conclusive on the jury. The jury may and is permitted to reach its own conclusion on an ultimate fact though such conclusion is adverse to the opinions expressed by the experts. In many cases involving questions of professional skill, however, with respect to which the layman has no knowledge and cannot accurately judge, the jury is not given so wide a latitude. This rule is quite generally applied in actions of malpractice, but not necessarily in all. A treatment may plainly indicate that the physician was negligent and an act shown to have been done or omitted may be such as obviously not to involve professional skill, under which circumstances the opinion of an expert as to the performance or nonperformance of the act is not required. The present case, however, does not fall within this class of exceptions. The trial court erred in refusing to grant the defendant-physician a nonsuit and refusing to direct a verdict in his favor.

The judgment of the court below was reversed and the case remanded for a new trial.

Books as Evidence: Amenities of Witness Stand

(Edwards v. Union Buffalo Mills Co. (S. C.), 159 S. E. 818; Baker v. Southern Cotton Oil Co. (S. C.), 159 S. E. 822)

The South Carolina Code of Civil Procedure, 1922, Section 744, provides that in all actions or proceedings, civil or criminal, in which the question of sanity or insanity or the administration of poison or other article destructive to life is involved and in which expert testimony might be introduced, medical or scientific works, or such parts hereof as may be relevant to the issues, shall be admissible, to be read before the court or jury, in addition to such expert testimony. The fact, says the Supreme Court of South Carolina, that the general assembly found it necessary by a special enactment to authorize the reading of medical or scientific books in cases involving insanity or the administration of poisons or other deadly articles is unanswerable proof of the assembly's intention that such books should not be read to the court or jury in other cases. Such books may be legitimately used by counsel in framing hypothetical questions, but they cannot be used as testimony.

A hearsay statement, according to Corpus Juris, does not become competent by reason of the fact that it is printed, even though it appears in the responsible form of a book, and even though such book is a treatise by an author of standard authority on a scientific subject, such as a medical treatise (22 C. J. 210, 211); nor can the admission of evidence from a medical book be secured indirectly by asking a medical expert whether extracts read to him from such a treatise are accurate statements of the facts (*Davis* v. *State*, 38 Md. 15; *Marshall* v. *Brown*, 50 Mich. 148, 15 N. W. 55); nor is it an available expedient to attempt to corroborate a medical witness by showing that a certain treatise sustains his position (*Fox* v. *Peninsula White Lead, etc., Works*, 84 Mich. 676, 48 N. W. 203; *Huffman* v. *Click*, 77 N. C. 55). ". . . the caution of the courts in admitting opinions which are not based on the observation of the particular facts of the case, the universal requirement that the testimony given to a jury should be under the sanction of an oath, and subject to the test of a cross examination, and the probability of misleading a jury by reading to them general statements to which they are hardly competent to apply the necessary qualifications and distinctions, have led to a more or less general refusal of courts to permit scientific treatises, particularly medical books, to be proved as standard books of authority and extracts therefrom to be used as opinion evidence" (11 R. C. L. 588-89).

Such a practice as having the jurors who are trying a case leave their seats and examine the plaintiff's leg, stick pins into it, etc., makes witnesses out of the jurors and is not to be commended, but in this case the court regarded it as hardly calling for a reversal of judgment. Jurors should occupy a wholly detached attitude.

In the zeal of argument, counsel may say harsh things of witnesses who have testified against his cause, and if there is evidence to support it, allowance may well be made for intemperance of language. There is no palliation, however, when counsel, without foundation in the evidence, asperses the integrity and veracity of respectable witnesses, as in the present case, by suggesting that the medical witnesses for the defendant were liars or men who had been bought, or could be bought, by the defendant's money. Uncalled for personal abuse of a witness by counsel is objectionable and will not be condoned

by the court (*State* v. *Kennedy*, 143 S. C. 318, 141 S. E. 559). In an action for personal injuries it has been held to be error for counsel for plaintiff, in alluding to physicians employed by the defendant railroad company to refer to them as "hirelings" and to denounce one of them who was named Arnold as "Benedict" Arnold (*Mott* v. *Detroit, G. H. & M. Co.*, 120 Mich. 127, 79 N. W. 3).

Society Proceedings

COMING MEETINGS

Montana, Medical Association of, Miles City, July 13-14. Dr. E. G. Balsam, 208 North Broadway, Billings, Secretary.

Wyoming State Medical Society, Rock Springs, July 18-19. Dr. Earl Whedon, 50 N. Main Street, Sheridan, Secretary.

ASSOCIATION OF AMERICAN PHYSICIANS

Forty-Seventh Annual Meeting, held at Atlantic City, N. J., May 3 and 4, 1932

(Continued from page 72)

A Study of So-Called Splenic Anemia, and Banti's Syndrome

DRS. C. P. HOWARD and E. S. MILLS, Montreal: The diseases that have been included at one time or another under the term splenic anemia are many and varied. One by one these have been recognized as separate diseases and removed from the parent stock, until at the present time there exists some doubt as to whether there is sufficient left to justify considering the disease a separate entity. Authorities are coming to regard the disease as a collection of symptoms without any histopathologic basis whatever.

During six years, from 1926 to 1931, out of a total of 9,151 medical admissions to the Montreal General Hospital, the diagnosis of splenic anemia or Banti's disease was made in 22 cases. In 14 of these cases a histopathologic study of the spleen was obtained. In the rest, no opportunity for confirming the clinical diagnosis was afforded. The proportion of males to females was 6 to 15, a reversal of the usual sex incidence, but this is hardly significant in a small series. About half of the cases occurred in the third and fourth decades. A family history of the disease was given by one patient. Only one patient showed alcoholism. Onset in 11 cases (50 per cent) was characterized by gastro-intestinal hemorrhages. Laparotomy showed cirrhosis of the liver in only 4 of these. In the other 11, anemia, weakness, fatigue and dyspnea on exertion were present. Three patients complained of pain in the splenic region. In 6 cases the symptoms had been present less than two years. In the rest, it was two years or over. All patients appeared anemic; 2 had jaundice, 3 had ascites. The spleen showed considerable variation in size. The liver was normal in 10 out of 22 cases. The blood picture was constant. Some degree of hypochromic anemia was present, but the red cell count was above 4 million in 9 cases. In sixteen cases there was leukopenia. The plasma bilirubin was increased in 11 cases. Blood platelets were reduced in 14 cases.

The observations lead one to believe that the clinical diagnosis of splenic anemia must depend on a history of unexplained gastro-intestinal hemorrhages, a chronic intractable hypochromic anemia and little but the finding of an enlarged spleen on clinical examination. The hematologic observations are diagnostic. Splenectomy was performed in 11 cases, with 3 fatalities; in the latter, all the patients had cirrhosis of the liver. None of the patients operated on, who previously had hemorrhages, have had a recurrence even after six years. Two had relapses into anemia but responded to therapy.

Dr. Rhea, our pathologist, reports that these spleens are different from cases showing ordinary portal cirrhosis. The venous sinuses of the pulp are dilated, but the pulp is not increased. The more advanced cases progress toward fibrosis. Finally, it seems that in true splenic anemia the reticuloendothelium of the spleen undergoes physiologic and histologic changes. Removal of the spleen gives relief if it is undertaken early and before portal obstruction has occurred.

DISCUSSION

DR. HENRY A. CHRISTIAN, Boston: I should like to ask whether splenic anemia and Banti's disease are regarded as synonymous terms or not. I should like to know whether in the title of this paper as published on the program it should be "and" or "or." I should like to ask whether hematopoietic activity was shown as in enlarged spleen with anemia of this type.

DR. WALTER HAMBURGER, Chicago: I should like to know whether the following type was included in this group: In 1920 Eppinger, from a study of his cases, drew a picture of thrombosis of the splenic vein, with enlargement of the spleen and anemia and leukopenia. This was distinct from Banti's disease, so-called, but on the basis of accessory symptoms the diagnosis can be correctly made. There are a large number of cases in the German, French and Italian literature, but there are few in the American literature. In 1904 Warfield showed extensive thrombosis of the splenic and portal veins. Warfield thought that thrombosis was the essential cause of the condition. I have found three other references. In children, removal of the spleen has seemed to have a beneficial effect.

DR. JOSEPH L. MILLER, Chicago: The authors said that this disturbance was in the veins coming from the stomach. Now without thrombosis why should the patients have hemorrhage?

DR. GEORGE BLUMER, New Haven, Conn.: We have two cases now at the New Haven Hospital. There is a characteristic history of the patients' having had, for several years before admission, a febrile illness and pain in the upper left quadrant of the abdomen. That sign helped to put us on the alert.

DR. C. P. HOWARD, Montreal: Many will wonder at our temerity in introducing such a well worn subject. I have had interesting discussions on it with Dr. Krumbhaar. As an old student of Osler I have had a great deal of interest in splenic anemia, and in thirty years of experience I have wavered from one side to the other, and only recently have I been convinced by Dr. Rhea, my associate in pathology, that only a limited group of cases can be really named Banti's disease. The term splenic anemia is fast disappearing from our terminology. Graham's cases of hemolytic jaundice are distinct entities, but there is a small and distinct group that can correctly be called Banti's disease. Clinically we think we can recognize this group mainly by exclusion and by applying modern hematologic methods. Gordon and other workers in Montreal have applied these methods. The cases have been studied both before and after operation. Our clinical reports hinge on Dr. Rhea's pathologic diagnosis. When he says Banti's disease, we are satisfied. There are many who will dispute such a state of mind, but we shall stick to the term Banti's disease for this group of cases. Dr. Miller asks why hemorrhage should occur without thrombosis. Many cases that came to necropsy have shown varices and also dilated vasa brevia, and profuse hemorrhages have occurred, why more than with thrombosis I cannot say. I feel that there is a small group which still must be called Banti's syndrome.

DR. THOMAS MCCRAE, Philadelphia: Dr. Christian referred to the terminology. Drs. Howard and Mills have used the term Banti's disease. The lesion that Banti described was splenic anemia with secondary portal cirrhosis, but in certain cases the patients may die without portal cirrhosis. Should these be regarded as cases of Banti's disease? Splenic anemia was the term used before Banti's disease, but Banti's lesion included portal cirrhosis. Many of the cases that are diagnosed as Banti's disease are really syphilis of the liver. A distinction should be made between splenic anemia and Banti's disease. If the condition includes portal cirrhosis, it is really Banti's disease.

DR. W. S. THAYER, Baltimore: Did any of these patients from whom all the spleen had been removed die later with gastric hemorrhage or hemoptysis?

DR. E. S. MILLS, Montreal: Dr. Howard has answered most of the questions. In answer to Dr. Thayer, none of the patients with gastric hemorrhage have had recurrence, and none died. In one case in which splenectomy had been performed in 1927 (a case of Banti's disease) there were extremely

large vasa brevia from the spleen to the stomach. The patient was operated on later for pyloric ulcer, which was not present at the time of the splenectomy. We were interested to find that the dilated vessels were now of normal size and that the liver was normal five years after the first operation. I should have mentioned that none of the cases showed thrombosis of the splenic vein. As to the question of terminology. It should be realized that many of the cases originally described by Banti were undoubtedly syphilis. I think the preferable term to use is splenic anemia. We had one splenectomized patient who undoubtedly had syphilis, although sections of the liver at operation and the spleen did not show syphilis.

Treatment of Malignant Neutropenia with Pentose Nucleotides

DRS. HENRY JACKSON, JR., FREDERIC PARKER, JR., F. H. L. TAYLOR and JAMES RINEHART, Boston: There are a variety of ill defined clinical conditions of unknown origin that are termed leukopenia. These are accompanied by a grave prognosis. Two types may be noted: (1) the agranulocytotic angina described by Schultz and (2) the type with overwhelming sepsis. A great number of remedies have been suggested for treatment, and a few have been successful. Derivatives of nucleic acid have the power to raise the peripheral white blood cell count, just why is not clear. In 1922 one of us (Jackson) isolated pentose nucleotides from normal blood. As their presence is demonstrable in normal persons, I tried treatment of leukopenia with this substance. The treatment has been used by different physicians in different parts of the country. Intramuscular injections of 10 cc. of solution of nucleotides twice daily were given, until improvement was shown; that is, until the white blood cell count had been normal for three days. Other forms of treatment were purposely omitted. Of fifty-eight patients treated, forty-one recovered (71 per cent). In a former untreated series, we had 80 per cent mortality. The etiology in the treated series was as follows: benzene poisoning, two cases, 100 per cent recovery; sepsis cases, thirteen, with 85 per cent recovery, and agranulocytic angina, forty-three cases, with 65 per cent recovery. In one severe case of bilateral pneumonia with a leukocyte count of 200, the patient recovered. The leukocyte count begins to rise about the fifth day and is progressive thereafter. This is about the time of hematologic regeneration shown with use of liver extract.

The Treatment of Granulopenia with Nucleotide Derivatives

DRS. JAMES S. MCLESTER, Birmingham, Ala., and W. H. PARSONS, Vicksburg, Miss.: Two patients with granulopenia were treated with the nucleotide derivative adenine sulphate. The illness of one of these was acute and stormy; that of the other, chronic and long drawn out. Both patients showed immediate and marked improvement on receiving intravenously 0.5 Gm. of the drug daily. Both recovered.

DISCUSSION

DR. PAUL REZNIKOFF, New York: I have studied certain cases, some of which were definite agranulocytosis. In some there was a question whether the diagnosis should be aleukemic anemia. In some, arsphenamine therapy was used. Of thirteen patients, ten recovered, or 77 per cent. Usually the response takes place within forty-eight hours in all acute cases. The second point is the use of solution of epinephrine. With two exceptions there was no reaction. The objection is that it is rather insoluble. I agree with the authors that a great many spontaneous recoveries occur. I think that three of my patients were showing a beginning recovery before epinephrine was given. In clinical work one is dealing with contradictory evidence. I think that agranulocystosis must be produced experimentally in animals before the point can be proved.

DR. F. G. BLAKE, New Haven, Conn.: One point of difference is in time response as shown by Dr. Reznikoff to be forty-eight hours and by Dr. Jackson and his co-workers to be five or six days. Have the latter observed a well defined response in that time? Several patients whom I have treated are included in their response. Our initial response is forty-eight hours, at which time young granulocytes appear in the blood.

DR. JOSEPH L. MILLER, Chicago: Have Dr. Jackson and his co-workers noted any disturbing reaction, such as thrombophlebitis, after intramuscular injection of nuclein?

DR. F. W. WHITE, Boston: The significance should be realized of the contribution made by Dr. Jackson and his co-workers. If one can take a clean chemical substance made synthetically and cause a drift of differentiated cells manufactured in the bone marrow toward polynuclear cells, it is a matter of great importance. If a chemical substance of known composition can be introduced into the body when there is a lack of that substance which acts as a catalyst, a means is afforded of affecting clinical phenomena in which the lack of a certain substance is the cause of the condition. If one can succeed in adding a clean chemical substance to influence the underlying chemistry of differentiation of cells, an advance has been made toward understanding the processes that go on in the body.

DR. HENRY A. CHRISTIAN, Boston: Biologic factors have an influence in this problem. There are two fundamental disturbances which precipitate this sudden calamitous development. Have these individuals a deficiency in the hematogenous apparatus? Are they abnormal in this respect always, and do they respond in an unusually violent way to some slight factor or is it a disease factor in which the cause is some virulent organism, which gets an opportunity to develop in some entirely normal individual? In other words, are we dealing with a type of general condition in familial blood disease, or are we dealing with a peculiar form of infectious disease? I had the misfortune to have such a case develop in a house officer. He apparently responded in a peculiar way to infection. He had had his tonsils removed at the Mayo Clinic. Next day he had a condition which made it doubtful whether he had scarlet fever. He was desperately ill, had a rash, and temperature of 105 F., although the lesion in the throat was only a minor infection. The terminal illness started as a streptococcal tonsillitis. There was a great drop in leukocytes. He gave little or no response to the material furnished by Dr. Jackson. He died in four days. It looks to me as if there is something fundamentally important in this disease that no one knows about. I should like to ask the readers of papers what their conception is of this condition: Is it something that occurs suddenly or is it a chronic potential disturbance made possible by a cause which would be slight in a normal individual?

DR. EUGENE S. KILGORE, San Francisco: A woman, now 62, has been observed five or six years and always has a white cell count between 1,200 and 1,800; about 50 per cent are polymorphonuclears, and all cells, both red and white, appear normal. She has passed through several mild respiratory infections without mishap. Has Dr. Jackson any experience in the treatment of such chronic leukocytopenia?

DR. HENRY JACKSON, JR., Boston: We had one patient who had had vaccine prior to this illness. We had four altogether; one had had typhoid. One boy had sore throat and received toxin-antitoxin. He had a temperature of 105 F. The illness lasted thirty-five days and the leukocyte count was 1,000 most of the time. In regard to Dr. Reznikoff's question of dosage, our own dosage is entirely empirical. Why we chose 0.7 Gm., I don't know. I think the dose should be increased. In the case to which Dr. Miller referred, the small dose produced no effect and the larger dose brought about recovery. In one case of gangrene of the arm there was the same condition. We used the larger dosage with improvement. The case cited by Dr. Kilgore was chronic. Another such case occurred in a school boy, who has to keep up a regular dosage if he wants to keep up with his work in school. If he fails with one dose he has to give up his work. The leukocytes fall below 1,000. In some cases this is a cyclic phenomenon. It is a chance whether improvement and dosage agree. Unfortunately, we have had only a few smears to study, so we have had to take evidence of clinical improvement rather than proof by smears. As to time of reaction, we have seen an occasional young polymorphonuclear cell in forty-eight hours. Dr. Miller asks if we have seen reactions. Unfortunately we have. One lot of solution of nucleotides on the market gave severe reactions, but it has been eliminated.

In regard to thrombosis following the chemical, I know the case referred to by Dr. Miller. This interesting fact emerges: As the white cell count rises, in many cases there develops rather suddenly a septic process, such as ischiorectal abscess, or empyema. The infection has been present but the clinical manifestations are not possible in the absence of white cells. An abscess cannot develop without pus. As to the cause of the disease, I do not think we can answer Dr. Christian's question as to what true agranulocytic angina is. I think it should be differentiated from the type of disease following infection.

The Treatment of Purpura Hemorrhagica

DRS. HAROLD W. JONES and LEANDRO TOCANTINS, Philadelphia: The title "purpura hemorrhagica" is chosen rather than "essential thrombocytopenia," which, we think, is an erroneous term. We have observed cases in common with others in which the platelets are normal and yet hemorrhagic phenomena are present. The essential feature of this disease is not platelet reduction but capillary hyperpermeability or a combination of the two. The bleeding time is the most suitable index of this disease. In a consideration of treatment, bleeding time should be taken as an index of improvement, or at least control. This study includes fifty-three patients. In a discussion of the treatment, the spontaneous cure must be given a prominent place. Ten of our patients were of this type. The acute fulminating case, whether it is primary or an acute exacerbation of the chronic, is a true emergency. Transfusion is almost a specific in these cases. Small amounts should be used, varying from 100 to 300 cc. at intervals of from one to five days. Some cases require as many as three transfusions in twenty-four hours in order to control the bleeding time. Transperitoneal transfusions are not effective. If the transfusion is not skilfully given, a reaction may occur. Large transfusions are contraindicated in most cases. A transfusion should not be left to be performed by an intern. After the patient has been brought to a safe level by the use of transfusion, focal infection should be removed and other forms of treatment instituted, such as high protein, high vitamin diet, viosterol and ultraviolet irradiation. In cases in which these methods fail, splenectomy may be resorted to. However, most of the cases respond to medical treatment. In our group only five patients received splenectomy. One death occurred. Splenectomy is not always successful. One patient, after splenectomy, failed to show the usual increase in platelets, and hemorrhagic phenomena recurred. These we have been able to control by the use of diet, viosterol, ultraviolet rays and iron. Ligation of the splenic artery has been used in thirty-four patients, two of whom have died. The spleen decreases in size. Neither necrosis nor infarct occurs. The results with this method are a little slower but just as satisfactory as with splenectomy. The operation is performed with less danger to the patient. We feel, however, that none of the treatment suggested is entirely satisfactory. The disease has much in common with pernicious anemia. Not many years ago we were discussing pernicious anemia from the same standpoint, that is, spontaneous recovery, the fact that most of the cases occurred in the spring, that many modes of treatment benefited, that splenectomy was beneficial and that transfusions helped not a few. We conclude that this disease is a deficiency disease occurring in an individual with a constitutional defect, the acute phase of which may be precipitated by some infectious process or some agent which acts in a similar manner; and we again wish to draw attention to the fact that capillary hyperpermeability and altered bleeding time are more essential features than platelet deficiency.

DISCUSSION

DR. AUGUSTUS WADSWORTH, Albany, N. Y.: I should like to know to what extent this is attributed to an infectious process. Focal infection was mentioned. I recall a case of purpura in which the focal infection was a streptococcic abscess in the kidney which had lasted for twelve years. The patient was well except for the purpura. The diagnosis was made by examination of the urine. We recovered the streptococcus and I prepared a vaccine by growing the organisms in albumin blood broth, separating the cells from the toxin. The condition cleared up under vaccine inoculations. Later the patient was operated on for abscess and stone in the kidney. This reveals the striking action of streptococcus toxin in the tissues.

DR. W. L. MOSS, Athens, Ga.: I had a case in my family in 1929. I was requested by a physician to see my sister-in-law, who had acute hemorrhagic purpura. I think the diagnosis was clear. There had been purpuric manifestations for one month. She was very ill with extensive purpura, and bleeding from the mucous membranes of the mouth, tarry stools and constant vomiting. Platelets were nearly absent. I gave a transfusion of 250 cc. intravenously. The bleeding from the mucous membranes decreased. The bleeding time came down from thirty minutes. The hemorrhagic manifestations ceased in five days. A curious mental complex developed. She was disoriented and unable to speak. There were no hemorrhages in the eyegrounds. Lumbar puncture showed red blood cells in the spinal fluid. The fluid was xanthrochromatic. I thought there had been evidence of hemorrhage into the cerebral cortex. Roentgenograms of the teeth showed two abscesses. Two teeth were extracted, removing pus. I talked with Dr. Minot about the condition and he advised liver therapy. In half a day the platelets returned. The patient went home well. Later the platelets again disappeared from the blood, but without return of symptoms. I consulted Dr. Minot again, and he said to give more and better liver therapy. However, she did not get any more liver; nevertheless the platelets returned spontaneously.

DR. JOSEPH L. MILLER, Chicago: Acute purpura hemorrhagica often occurs in epidemic form in the spring, about the time of acute rheumatic fever. I used to see three or four cases every spring, without rheumatic involvement. I began to use from 50 to 60 cc. of normal blood subcutaneously twice a day, and the cases cleared up promptly. I wonder whether blood given intramuscularly would not be as good as intravenously.

DR. HENRY A. CHRISTIAN, Boston: I should like to know what happened to the spleen when they ligated the splenic artery.

DR. H. W. JONES, Philadelphia: There is a striking relation between acute and chronic foci of infection in these cases. It would seem as if acute tonsillitis, erysipelas or other acute infections immediately precede the purpuric phenomena. We have tried to make a vaccine of toxins. I think it would be interesting to try this treatment. I think there is a place for this type of therapy. Removal of infectious foci, after the hemorrhagic phenomena have been controlled, is essential to prevent recurrence. The epidemic form of this disease I would call seasonal. In normal students, the reaction to the capillary test in springtime shows that there is at this time a tendency to hemorrhagic phenomena as regards capillary permeability. Dr. Christian asks what happens to the spleen after ligation. Thirty cases have been reported in the literature, with three deaths. The spleen becomes reduced in size. Thrombosis does not occur. Reduction in size is at the expense of the pulp. There are no infarcts and no bad results. The operation is easier to perform than splenectomy. Sometimes handling of the spleen starts symptoms. I do not know any form of treatment that can be called ideal. One worker has advocated antivenin of the South American type. This controls the capillary resistance. These patients have improved. Dr. Dochez worked with minute doses of moccasin venom. All remarks on treatment have to be weighed in regard to spontaneous recovery.

The Treatment of Essential Thrombocytopenic Purpura, with Notes on Forty-Four Cases in Which Splenectomy Was Performed

DR. HERBERT Z. GIFFIN, Rochester, Minn.: In an endeavor to determine the place of splenectomy in the treatment of hemorrhagic purpura, the following groups of cases were reviewed: forty-four cases under personal observation in which splenectomy was done, twenty-one cases not submitted to splenectomy, and twenty incipient acute cases reviewed from the literature since 1926, and not included in Spence's collection of cases reported in 1928. Cases were grouped as chronic with multiple recrudescences, and as incipient, or those seen in the primary attack. Chronic cases were divided into mild cases, cases of moderate and marked severity, and cases seen

during an acute exacerbation of the chronic disease. Incipient cases were divided into mild cases, cases of moderate severity, and cases of incipient acute progressive type. The following conclusions were reached:

1. In chronic cases of hemorrhagic purpura of a mild degree of clinical severity the patients are best treated by the careful elimination of all focal infection, the administration of large doses of iron, an adequate diet, and transfusions if necessary.

2. In chronic cases of moderate or marked clinical severity, if the condition is sufficiently disabling, the patients are best treated by transfusion and splenectomy during remission; severe recurrences should not be allowed to develop in chronic types of the disease.

3. The cases seen in an acute exacerbation of chronic hemorrhagic purpura offer the greatest difficulty in the decision for or against splenectomy. Because of the fact that fundamentally the disease is one of remissions, every opportunity should be given to the patient, in an acute exacerbation with anemia, at least temporarily to improve before the advisability of splenectomy is decided on.

4. In incipient cases of short duration and mild and moderate severity the patients should be treated expectantly and by medical measures. In most of the incipient cases the patients recover spontaneously, and remain well.

5. In incipient acute progressive cases which are defined as cases of marked severity and progressive course in their primary attack, in which improvement does not occur with frequent transfusions, the patients are best treated by prompt splenectomy. In this group of cases an early accurate diagnosis and avoidance of procrastination are important.

6. Recurrences following splenectomy have been less frequent and less severe in recent years since more insistence has been placed on removal of focal infection, and subsequent reexamination for focal infection.

Hematopoietic Response in Pernicious Anemia, Following Intramuscular Injections of Gastric Juice

DRS. ROGER S. MORRIS, LEON SCHIFF, GEORGE BURGER and JAMES SHERMAN, Cincinnati: To determine whether the normal stomach secretes a substance which, while without effect on reticulocyte response when given orally, may, when given parenterally, cause a response, we proceeded as follows: Normal, nonanemic patients were given histamine and the gastric juice was extracted by lavage. The juice was then rendered neutral to litmus, proved sterile, and injected intramuscularly, first in rabbits, later in man, without undue reaction. Intravenous injection caused, however, severe local reaction.

Next, neutralized sterile juice in amounts up to 20 cc. was given intramuscularly to a patient with pernicious anemia. The reticulocyte response was very faint. Attempts were then made to concentrate the gastric juice by evaporation to a volume of about 3 to 5 per cent. We thus secured a preparation of definite activity in procuring reticulocyte response to about 6 per cent in a patient with one million red cells. This response was far below that produced by liver extract or desiccated hog stomach. We supposed our evaporation methods had partially inactivated the substance by the heat used (38 C.) and therefore, on the advice of Dr. Cullen, we used vacuum distillation for from two to four hours, at a temperature not above 40 C.

This distilled concentrated juice was now given to patients with pernicious anemia. The equivalent of 450 cc. of juice was given to a patient with 2.1 million red cells and it produced a reticulocytosis of 17.6 per cent in thirty-six hours. Twelve days after the injection the red count and hemoglobin percentage began to increase. During the next twelve days the count increased by 1.5 million red cells and the hemoglobin by 20 per cent. It then remained stationary until further treatment was given. In a second patient a still more striking rise was obtained. The results obtained lead us to infer that there is a powerful bone marrow stimulant present in normal gastric juice, which produces reticulocyte response and also maturation of the red cells. There is a still earlier increase in red cells containing nuclear particles. There is also an increase in the white cell count and an increase in blood platelets. We are trying, at present, to obtain greater potency through refinements of method. Since pain in the gluteal muscle and buttocks has been present after injection, we are endeavoring to procure an extract which lessens and shortens this symptom.

The antianemic substance of gastric juice is thermolabile, dialyzable and exhaustible and is probably a hormone, for which we have proposed the name addisin, after Thomas Addison, who first described pernicious anemia. Evidence indicates that this may be the physiologic stimulant of bone marrow, which maintains the blood cells and hemoglobin at the normal level. It seems highly probable that the lack of addisin in gastric juice is the cause of pernicious anemia. Its administration intramuscularly has proved to be efficacious therapeutically in this disease, and it may be found to be of use in other blood dyscrasias. Its effect on cord changes in pernicious anemia has not been determined.

DISCUSSION

DR. H. Z. GIFFIN, Rochester, Minn.: My associates collected gastric juice and concentrated it in vacuo from 195 cc. down to 8 cc. There was a very slight rise two days after the injection; then the reticulocytes fell back. On the eighth day they rose and on the tenth day the reticulocytes reached 21 per cent. This is the delayed type of reaction.

DR. W. B. CASTLE, Boston: I think the hematopoietic response may be of use in determining whether the intrinsic factor is present in the juice. I don't feel that I am able to say why it is necessary to assume that the substance demonstrated by Dr. Morris and his co-workers is the hormone which controls function of the bone marrow. In our early work we were anxious to discriminate clearly whether we were dealing with the substance present in the gastric juice or whether the substance acted on beef muscle to produce the reaction. Was it in the gastric juice alone, was it in the beef alone or was it an interaction between the two substances? Recently we have combined 50 cc. of gastric juice with 200 Gm. of beef muscle. It was surprising that results were not obtained with small quantities of gastric juice when injected intravenously. The effect of the substance by mouth is one-fiftieth that of intramuscular injection. Therefore 1 or 2 cc. of gastric juice administered intramuscularly should give results. Four hundred cubic centimeters of gastric juice would have an equivalent of 22 liters given by mouth. The liver, placenta, brain and pancreas all have hematogenic properties, but if one gave 22,000 cc. of gastric juice by mouth, I don't know what would happen. If our factor will work neutrally when given with beef muscle, are we giving opportunity for a certain amount of juice and a certain amount of muscle to react? I should like to bring out the fact that that possibility is still left open. We have the interaction as one factor, and hematopoiesis may be one possibility. We must be able to determine by intramuscular injection of gastric juice whether it contains the intrinsic factor or not. This work strongly suggests that possibility.

DR. J. T. WEARN, Cleveland: Why don't calves get pernicious anemia? Perhaps there is something in grass, grain or oats that prevents this. Recently a good product of pure calves' gastric juice was obtained from the fourth pouch of the stomach of the calf.

DR. ROGER S. MORRIS, Cincinnati: I do not know how to explain delayed reticulocyte response in the case quoted. In my experience, similar curves have not been encountered. I do not know whether I got all the points correctly from Dr. Castle. If this is a hormone, it is dialyzable and exhaustible, which militates against its being an enzyme. Whether it is the hormone or not, which is a physiologic stimulant for the bone marrow activity, we are unable to say. After a single dose given intramuscularly, we think we have got an increase in the red blood cells, leukocytes and blood platelets and this suggests that it is a bone marrow stimulus that operates to keep a balance of the bone marrow elements. We don't know why small amounts are ineffective. Apparently concentrated juice is needed. When the juice is not concentrated there is a deeper staining but no increase of reticulocytes. When we concentrate the juice we get good results. We have tried large amounts by mouth but have not been able to draw conclusions. We fed 10 liters of hog gastric juice through a duodenal tube to one patient but there was no change in

reticulocytes. As to the intramuscular injection resulting in interaction between the intrinsic factor and the beef muscle, we cannot answer that. We have examined the site of injection and have found no change either gross or microscopic, although there may have been some chemical change going on. We hope to throw light on this question later. If we can obtain a product which we can give intravenously, we can rule out the muscle reaction. When we gave from 300 to 400 cc. by mouth, the reaction began on the fifth day and reached its peak on the eighth day.

Observations on Etiology and Treatment of Sprue in Porto Rico

DRS. WILLIAM B. CASTLE, Boston, and CORNELIUS P. RHOADS, Springfield, Mass.: Study of 100 cases of sprue in Porto Rico, including cases in all stages of the disease, demonstrates a close relationship between this disease and addisonian pernicious anemia as to etiology and the most satisfactory methods of treatment. As has been postulated for pernicious anemia by one of us (W. B. C.), three possible mechanisms or combinations of these may be involved in the production of the "conditioned deficiency" believed to be the immediate cause of pernicious anemia. Free hydrochloric acid was demonstrated after an alcohol test meal in the gastric contents of about half the patients examined; after histamine, in about 20 per cent more. In certain cases of sprue a lack of "extrinsic factor" in the diet or a lack of "intrinsic factor" in the gastric juice, both in early and in late stages of the disease, was demonstrated. In some advanced cases an apparent difficulty in the absorption of hematopoietic substances from the gastro-intestinal tract was found to be an additional factor conditioning the major deficiency. The deficient substance is apparently identical with the hematopoietic substance produced by the interaction of beef muscle and normal human gastric juice or with the extracts of liver described by Cohn, Minot and their collaborators as effective in pernicious anemia. The sternal bone marrow examined after biopsy before treatment showed a megaloblastic proliferation comparable to that seen in pernicious anemia. No evidence of aplasia was obtained. No significant correlation between Monilia psilosis infection and sprue was observed in cultures of the stools in various types of anemia.

In nearly all the cases of sprue, prompt symptomatic relief of sore tongue and diarrhea was obtained from the administration of the liver extract effective in pernicious anemia either orally or especially by parenteral injection. The latter procedure was positively life saving in a few cases and the cost of treatment was materially less. In cases presenting a hyperchromic blood picture, adequate dosage with liver extract alone produced reticulocyte crises and improvement of the blood values occasionally as striking as in pernicious anemia but usually of a decidedly modified character. In many cases, satisfactory progress was not made without the addition of iron ammonium citrate, especially when, after treatment with liver extract, the hyperchromic anemia became hypochromic in character. In a small number of cases of sprue with an original hypochromic blood picture, iron therapy was effective in relieving the anemia but not the gastro-intestinal symptoms, which, however, yielded promptly to liver extract. In a few cases, autolyzed yeast preparations produced reticulocyte crises and improvement of the blood values.

DISCUSSION

DR. JOSEPH H. PRATT, Boston: One comes across few cases of sprue in practice. In my cases I made a study of the absorption of fat. The authors have not mentioned one feature which distinguishes sprue from pernicious anemia, and that is the presence of a fatty diarrhea, which does not occur in any other condition except advanced pancreatic diarrhea. I should like to ask Drs. Castle and Rhoads if such stools were reported by them. There is an enormous amount of fat in the stools, and absorption studies show that 50 per cent of the fat is not absorbed. This condition is not observed in pernicious anemia. The authors said that within five days the diarrhea had ceased. Can they give any opinion on that point and was there any investigation made on the amount of fat in the stools? In my first case of sprue the patient had come from Porto Rico, and examination showed 50 per cent of fat in the feces.

DR. W. B. CASTLE, Boston: I remember that the question was frequently asked what the difference is between sprue and pernicious anemia. It was embarrassing to realize that it could not be stated definitely in any one case. They are hard to distinguish, and yet the symptomatology is different. I have seen a case of sprue with fatty diarrhea, and yet when the patient arrived in Boston he apparently had pernicious anemia. Dr. Peabody also saw that patient, who had come from China. However, in cases like these, the sea voyage seems to cause a change. Probably the diet influences the nature of the stools. We were told that fat would produce diarrhea in these patients. We had difficulty in getting the doctors to allow us to keep the patient on a rice diet. We saw no fat in the stools, but I suspect that if the patient had eaten fat, it would have come through in the stools as there is a difficulty of absorption of some substances. But no matter what diet we gave, the administration of sufficient liver extract made the stools normal. Another piece of evidence was the clearing up of inflamed tongues. This proves the powerful effect of the substance on the lower gastro-intestinal tract and on the abnormal motility and absorption.

Chronic Severe Asthma: A Study of a Group of Cases Requiring Hospital Treatment

DR. FRANCIS M. RACKEMANN, Boston: This paper will appear in full in THE JOURNAL.

Pneumonoconiosis: An Unusually Malignant Form

DR. EUGENE S. KILGORE, San Francisco: This paper will appear in full in THE JOURNAL.

DISCUSSION

DR. J. H. MEANS, Boston: I saw the first patient mentioned in this presentation. The symptoms were marked. The lungs at necropsy showed an unusual state of fibrosis. They were full of areas of emphysema and were covered with air blebs. I think it is a good thing that mention has been made of the combination of silicon and alkali. This seems to produce a silicosis with more sudden and rapid symptoms. We should be on the lookout for cases with this particular symptomatology.

DR. EUGENE S. KILGORE, San Francisco: The unfortunate thing about this preparation is that the powder is extremely fine, and this accounts for its action on the respiratory tract. The British writers think that the added alkali is responsible for the deleterious action. They offer a chemical explanation favoring the view that silica is injurious when dissolved in faintly alkaline body juice, and that when alkali is introduced this effect occurs very rapidly.

The Mechanism of Nonobstructive Emphysema

DRS. HARRY L. ALEXANDER and W. B. KOUNTZ, St. Louis: There are two types of emphysema: (1) the type associated with bronchial obstruction, resulting in large lung, and (2) the senile type. Both have the barrel-shaped chest and hyperresonance of the lung. Obstructive emphysema pushes down the diaphragm so far that it has little excursion. The senile type, however, does not push the diaphragm down. If a pneumograph is put around the chest and abdomen the upper chest does the work, but in the senile type of emphysema the diaphragm does most of the work. In the obstructive type the vital capacity of the individual is reduced, but in the senile type there is little difference in the vital capacity. In the obstructive type there is considerable anoxemia and bowed spine, while the senile type shows the stiff, straight spine. There is a lesion of the intervertebral disks, and as the disks swell they crowd the bodies of the vertebrae, the spine curves and pushes away from the sternum and the ribs spread. Thus the obstructive type is primarily a pulmonary lesion, while the senile type is due to distortion of the spine, which distorts the chest wall. The senile type therefore is due to the distortion in the spine itself.

DISCUSSION

DR. FRANCIS RACKEMANN, Boston: Four out of thirteen of our cases showed emphysema. It occurred in the types of individuals that the authors have described.

(To be continued)

Current Medical Literature

AMERICAN

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Titles marked with an asterisk (*) are abstracted below.

Alabama Medical Association Journal, Montgomery

1: 385-416 (April) 1932

Tracheotomy Treatment of Pulmonary Suppuration Following Removal of Nail. M. Equen, Atlanta.—p. 385.

Rocky Mountain Spotted Fever: Report of Case. H. Boyd, Scottsboro.—p. 387.

Diagnosis of Upper Abdominal Conditions. A. C. Jackson, Jasper.—p. 389.

Use of Atropine in Eye Conditions. B. F. Jackson, Montgomery.—p. 391.

Tuberculosis, with Especial Reference to Incidence in Children and Modes of Infection. E. R. Emens, Decatur.—p. 392.

Dentistry in Relation to Obstetrics. R. C. Young, Anniston.—p. 394.

American Heart Journal, St. Louis

7: 415-552 (April) 1932

*Phlegmasia Alba Dolens and Relation of Lymphatics to Thrombophlebitis. J. Homans, Boston.—p. 415.

Some Clinical Features of Coronary Artery Disease. R. L. Levy, New York.—p. 431.

*Opening Snap (Claquement d'Ouverture de la Mitrale) in Mitral Stenosis: Its Characteristics, Mechanism of Production and Diagnostic Importance. A. Margolies and C. C. Wolferth, Philadelphia.—p. 443.

*Form of Premature Beats Resulting from Direct Stimulation of Human Ventricles. H. M. Marvin and A. W. Oughterson, New Haven, Conn.—p. 471.

Electrocardiographic Changes Following Ligation of Coronary Arteries of Dog. Arlie R. Barnes and F. C. Mann, Rochester, Minn.—p. 477.

*Auricular Flutter and Fibrillation Showing Varying Block Associated with Cheyne-Stokes Respiration. W. W. Hamburger, L. N. Katz and S. H. Rubinfeld, Chicago.—p. 498.

*Experimental Bundle-Branch Block in Cat. G. H. Roberts, J. H. Crawford, D. I. Abramson and J. C. Cardwell, Brooklyn.—p. 505.

Analysis of the Q-R-S Complex of Electrocardiogram. N. M. Fenichel, Brooklyn.—p. 514.

Relation of Lymphatics to Thrombophlebitis.—Homans calls attention to the fact that there are forms of thrombophlebitis dependent on an unhealthy state of the vein's wall—the varicose type—and peculiar sorts, partly of local origin and partly due, perhaps, to an abnormality of the blood—phlebitis migrans. There are also venous thromboses of traumatic origin. But thrombophlebitis which affects the previously healthy veins draining the lower limbs, particularly the familiar scourge phlegmasia alba dolens, appears to be secondary to a nonsuppurative lymphangitis, which from its situation is able to attack artery as well as vein. And the principal manifestations of such a disease are neither venous nor arterial but lymphatic.

Opening Snap in Mitral Stenosis.—According to Margolies and Wolferth, the opening snap (claquement d'ouverture de la mitrale) can be heard and recorded in more than half the cases of mitral stenosis. It has not been observed in the absence of mitral stenosis. It is one of the most important diagnostic signs of this valvular lesion. The chief characteristics of the opening snap are the following: 1. The sound is a sharp snap or click. 2. It has been found to occur from 0.03 to 0.19 second after the beginning of the second sound, the ordinary range being from 0.06 to 0.11 second. 3. It is usually loudest in the fourth left interspace, occasionally in the third, slightly above and to the right of the area in which the diastolic murmur is best heard. 4. It precedes the onset of the murmur by a short interval. 5. It is usually best elicited with the patient in the recumbent position. 6. In some cases it can be brought out by exercise and by increase of the cardiac rate. 7. It tends to be louder when the rate is rapid. The interval between the second heart sound and the opening snap is influenced by the cardiac rate, tending to become shorter as the rate increases. Variations in the duration of this interval occur during auricular fibrillation and sinus arrhythmia, depending on the length of the preceding heart cycle. The opening snap is easily differentiated from reduplication of the second sound, protodiastolic gallop sound, the physiologic third heart sound and systolic clicking sounds. The time relations of the opening snap, as observed from comparisons of sound tracings with electrocardiograms, apex cardiograms, jugular phlebograms, and auricular and ventricular roentgen kymograms, exclude auricular contraction, ventricular rotation or filling, or shocklike waves transmitted from the aortic to the mitral valve, as factors in its production. All the evidence thus far available is in accord with the hypothesis that the sound is produced by the sudden limitation of the opening movement of a stenosed mitral valve which occurs in early diastole as soon as the left ventricle relaxes sufficiently to permit the pressure of the auricular blood column to become effective.

Premature Beats from Direct Stimulation of Ventricles.—Premature contractions evoked by electrical stimulation of one spot on the right ventricle and one on the left ventricle of a partially exposed human heart were recorded by Marvin and Oughterson in the three standard leads of the electrocardiogram. These were not taken simultaneously but consecutively. The authors were able to confirm the observations of Barker, Macleod and Alexander, who first showed that premature contractions derived from stimulation of the right ventricle have the chief initial deflection upward in lead I, while those from stimulation of the left ventricle have the chief initial deflection downward in lead I.

Auricular Flutter and Fibrillation.—Hamburger and his associates report an unusual case in which the auriculoventricular block accompanying auricular flutter and coarse auricular fibrillation varied markedly during Cheyne-Stokes breathing, in one instance leading to a complete auriculoventricular block during the hyperpneic stage. Hyperpnea in this case increased the auriculoventricular block and apnea decreased it, without any apparent effect on the rate of flutter or fibrillation of the auricles.

Experimental Bundle-Branch Block.—Roberts and his associates performed experiments on cats in which either the right or left division of the bundle of His was cut. Both concordant and discordant curves were obtained. When the right division was transected, the chief initial deflection in lead I was downward in both types, but in lead III it was upward in the discordant type and the reverse in the concordant. When the left division was cut, exactly opposite results were found. In analyzing the curves, the important lead to study in order to decide on the location of the lesion appeared to be lead I.

American Journal of Anatomy, Philadelphia

50: 1-177 (March 15) 1932

*Effect on Subsequent Pregnancy After Roentgen Raying One Ovary of Rat, Following Removal of Normal Ovary During Course of Gestation. R. I. Pencharz and J. A. Long, San Francisco.—p. 1.

*Gonad Hormone Functions, and Reciprocal Influence Between Gonads and Hypophysis with Its Bearing on Problem of Sex Hormone Antagonism. C. R. Moore and Dorothy Price, Chicago.—p. 13.

*Cowper's Gland and Its Reaction to Castration and to Different Sex-Hormone Conditions. R. E. Heller, Chicago.—p. 73.

Osteoclasts and Cartilage Removal in Endochrondral Ossification of Certain Mammals. G. S. Dodds, Morgantown, W. Va.—p. 97.

Effects of Continued Estrin Injections on Young Rats. J. Spencer, F. E. D'Amour and R. G. Gustavson, Denver.—p. 129.

Nasal Cavity and Direction of Fluid by Ciliary Movement in Macacus Rhesus (Desm.). A. M. Lucas, St. Louis.—p. 141.

Effect of Roentgen Rays on Pregnancy.—Pencharz and Long drew one ovary in each of twenty-four rats through a dorsal incision and exposed it to roentgen rays while all the rest of the body was completely protected. During pregnancy immediately following, the untreated ovary was removed. Abortion or resorption resulted in twenty-three out of the twenty-four cases. In the twenty-fourth case the normal ovary was removed so late in gestation (nineteenth day) as to make the case comparable to ordinary late ovariectomy. The irradiated ovaries contained what is apparently luteal tissue, interstitial tissue, and degenerate follicles. The presence of an irradiated ovary containing these structures is not sufficient to maintain pregnancy.

Gonad Hormone Functions.—Moore and Price describe experiments from which they conclude that a large number of reproductive phenomena, gonadal and reproductive accessory

behaviors, can be interpreted logically on a basis of hypophysis-gonadal interrelationships. Gonads function only when they are forcibly stimulated by certain secretions that are normally provided by hypophyseal activity. The activity of the hypophysis, on the other hand, is to some extent controlled by gonadal secretions, for when these gonad hormones are present in effective amounts hypophyseal activity is lowered. Sex-hormone antagonism, in the Steinach sense, does not exist. Injuries to the gonads follow administration of either sex hormone into either sex, and the authors interpret the mechanism as a hypophyseal involvement.

Cowper's Gland and Its Reaction to Castration.—According to Heller, Cowper's gland of guinea-pigs and rats undergoes involution after castration, the changes occurring more rapidly in the rat. These glands reach their adult secretory state at approximately 55 days of age in the rat. Castration atrophy in Cowper's gland is detectable in the rat in ten days; it is well advanced at twenty days, and reaches essentially its maximal state of involution at approximately a hundred days. Injection of testis hormone prevents castration atrophy or repairs castration damage already present. Administration of gonadal-stimulating substances by means of fresh hypophyseal implants or hebin injections in normal young males results in a precocious development of these glands. Administration of estrin to castrated males is without effect on Cowper's gland; injection into normal males, however, is followed by involution changes in these glands that resemble castration atrophy in all respects. Mixtures of estrin and testis hormone injected into normal or castrated males result in normal Cowper's glands. Estrin injections into normal males accompanied by administrations of gonadal-stimulating substances do not cause damage to Cowper's gland. These observations are in agreement with the factual basis of the theory of a reciprocal influence between gonads and hypophysis, developed by Moore and Price, and are interpreted on that basis.

American Journal of Diseases of Children, Chicago

43: 803-1050 (April) 1932

*Pulmonary Diseases: Five Thousand Eight Hundred and Sixteen Cases in Children, with Especial Reference to Childhood Type of Tuberculosis. C. A. Stewart, Minneapolis.—p. 803.

*Human Milk Studies: IX. Variations in Composition of Milk at Four Hour Intervals During Day and Night. Betty Nims, Icie G. Macy, Minerva Brown and Helen A. Hunscher, Detroit.—p. 828.

*Respiratory Metabolism in Infancy and Childhood: XIII. Calorigenic Action of Thyroid Extracts in Normal Infants. T. C. Wyatt, Syracuse, N. Y.; L. E. Weymuller, Brooklyn, and S. Z. Levine, with assistance of M. Kelly, New York.—p. 845.

*Hymenolepis Nana: Report of Additional Cases and Experimental Transmission from Man to Rats. H. Tsuchiya and E. H. Rohlfing, St. Louis.—p. 865.

*Influenzal Meningitis Treated with Specific Antiserum and Complement: Report of Five Cases. H. K. Ward and L. D. Fothergill, Boston.—p. 873.

*Changes of Blood Lipid in Children Following Application of Anhydrous Wool Fat and Ultraviolet Irradiation. J. S. Leopold, A. Bernhard and A. Tow, with assistance of I. J. Drekter, New York.—p. 882.

Normal Histology of Infants' Brains, with Particular Reference to Anatomic Changes in Brain in Intestinal Intoxication of Infants. H. Schwarz, P. Goolker and J. H. Globus, New York.—p. 889.

Agranulocytosis: Report of Case, with Autopsy Observations. L. W. Empey and F. Proescher, San Jose, Calif.—p. 947.

Pulmonary Diseases.—Stewart's report is based on a study of 5,816 children, including 3,981 (68.4 per cent) and 1,835 (31.6 per cent) children having negative and positive Pirquet tests, respectively. In 1,179 children, or 20.3 per cent of the entire group of 5,816 persons, intrathoracic disease was revealed by roentgen examination. The prevailing type of lesion found in these 1,179 children was that produced by the first infection by Mycobacterium tuberculosis, as shown by the fact that childhood tuberculosis was found in 82.3 per cent (970 instances) of these cases. For the 3,981 children having a negative Pirquet test, intrathoracic disease was reported in only 6.4 per cent of the cases (255 children), of which 3.9 per cent (154 cases) had lesions characteristic of the childhood type of tuberculosis. If questionable and slight intrathoracic glandular calcifications are excluded, the data show that the more conspicuous lesions characteristic of childhood primary tuberculosis were found in only 0.58 per cent (23 cases) of the children with a negative Pirquet test. For the 1,835 children having a positive Pirquet test, intrathoracic disease was discovered by roentgen examination in 50.4 per cent (924 cases), and 44.5 per cent (816 children) had lesions of the childhood type of tuberculosis. When questionable and slight intrathoracic glandular calcifications are excluded, the more conspicuous and readily identified lesions typical of tuberculosis of first infection were found in 25.9 per cent (475 cases) of the 1,835 children with a positive Pirquet test. If a value of 100 per cent is assigned to the Pirquet test as measuring its efficiency in the discovery of childhood tuberculosis, the roentgen examination has a reliable efficiency of about 25 per cent, and the physical examination an efficiency of a small fraction of 1 per cent. From the standpoint of the appearance of lesions discovered by roentgen examination, childhood pulmonary tuberculosis of first infection may be divided into the following three types: (1) resolving pneumonic-appearing parenchymal consolidations, which represent early stages of the disease; (2) intrathoracic glandular calcifications of various degrees, which represent late permanent stages of the disease, and (3) Ghon tubercules associated with hilar gland calcification, which represent late and permanent stages of the diseases. These various types of lesions merely represent various developmental stages in the evolution of the disease produced by a primary tuberculous infection, between which many transitional stages may be noted. The end-result in nonfatal cases is always the same in that calcification of the hilus glands appears, or that Ghon tubercles develop associated with calcification of the homolateral hilus lymph nodes.

Human Milk Studies.—Nims and her associates studied the variations that occur in the composition of human milk at periodic four hour intervals throughout the day and night. The subjects were three women living in their usual home environments, typical of the average middle-class American family. Under the conditions of the experiments it was demonstrated that, independently of variations in such factors as food, rest, activity, stage of lactation, climate and possible errors involved in the methods followed, there were significant changes during the day in the volume of the breast milk of the three women, and characteristic daily trends in the variation in composition of the milk with respect to the fat, total solids, total nitrogen, total ash, calcium, phosphorus and chloride components.

Respiratory Metabolism in Infancy and Childhood.—Wyatt and his associates briefly summarize the results of their study of the effect of thyroid therapy on the energy exchange of normal infants as follows: 1. Thyroid extracts, in adequate dosage, exert a calorifacient action in infants with apparently normal thyroids and often induce in these subjects clinical symptoms characteristic of spontaneous hyperthyroidism. 2. The metabolic response of these subjects to thyroid extracts in smaller dosage is inconstant. 3. The minimal amounts of the drug capable of producing profound clinical and metabolic reactions in infants without hypothyroidism are apparently comparable to the dosage required to induce a similar response in adults without hypothyroidism. They notably exceed the usual dosage effective in subjects of all ages with hypothyroidism. 4. The usual persistence of thyroid action in these normal infants was approximately two to three weeks. This time interval coincides with the usual duration of thyroid action reported for normal adults and is considerably shorter than the persistence of such action in subjects with hypothyroidism. 5. In terms of absolute dosage, the whole gland product and the desiccated extract vary markedly in their potency as calorigenic agents, but they are equally potent when judged by their iodine content. On the latter basis, thyroxine, the active principle of the thyroid hormone, appears to be the most potent calorigenically of the three products.

Hymenolepis Nana.—Tsuchiya and Rohlfing describe two cases of hymenolepis infection (Hymenolepis nana) in St. Louis, in addition to those previously reported by Goldman. Neither clinical nor laboratory observations, however, were indicative of pathologic conditions in these children. With a view to determining the possible source of hymenolepis infection, a cross-infection experiment with ova from human sources was carried out in rats. The results of this study showed that two of six clean rats were successfully infected with Hymenolepis nana. Subsequent experiments showed that five of ten clean rats were found to be infected with the ova of the two rats previously infected with human materials. Since there is the possibility of acclimatizing human parasites in rats, rats in turn may become one of the sources of the infection in human beings.

Influenzal Meningitis.—Five patients with acute meningitis caused by the influenza bacillus were treated locally by Ward and Fothergill with the injection of fresh normal serum and an efficient specific antiserum. All the patients died eventually, but in every case the cerebrospinal fluid was sterilized for varying periods, up to fourteen days. The authors believe that the cause of death was almost certainly due to a localization of the inflammatory process in areas that were shut off from the general subarachnoid space, and so protected from the action of the complement and the specific antiserum.

Blood Cholesterol.—Leopold and his associates report that ultraviolet irradiation increased the blood lipids in 25 per cent of thirty-two patients studied. Treatment by inunction with nonirradiated wool fat produced no changes in blood lipids, but subsequent treatment with irradiated wool fat definitely increased the lipid fractions of the blood. Treatment with inunctions of wool fat followed by ultraviolet irradiation produced significant increases in blood lipids in 89 per cent of the cases with a low initial cholesterol and in 33 per cent of the cases with a normal initial cholesterol. Treatment with wool fat and ultraviolet rays also produced a rise in free cholesterol and cholesterol esters in 86 per cent of the cases, and of the total alcohol ether extract in 91 per cent of the cases in which this treatment was given. Of ten cases in which a low initial value for lipoid phosphorus was encountered, none showed a rise in lipoid phosphorus after treatment with wool fat and ultraviolet irradiation. Low values for cholesterol are an indication as to the necessity for treatment with inunctions of wool fat and ultraviolet irradiation. Changes in the amount of cholesterol serve as a guide to the amount of treatment to be given.

American Journal of Public Health, New York

22: 353-454 (April) 1932

Ice Cream Sanitation and Control. F. W. Fabian, East Lansing, Mich.—p. 353.
*Relative Pneumonia Fatality Among Surface Workers and Miners: Study of Two Thousand Six Hundred and Three Cases of Pneumonia and Two Hundred and Thirty-Eight Deaths from Tuberculosis in Experience of Tennessee Coal, Iron and Railroad Company, 1925 to 1930, Inclusive. C. H. Kibbey, Fairfield, Ala.—p. 360.
*Tuberculosis in Young Females. W. J. V. Deacon, Lansing, Mich.—p. 367.
Basis of Rationing for Federal Prisoners. P. E. Howe and A. H. MacCormick, Washington, D. C.—p. 375.
Experimental Poliomyelitis: Its Contribution to Our Knowledge of Human Disease. S. D. Kramer, Boston.—p. 381.
Basic Records for Use in County Health Department. J. Collinson, Baltimore.—p. 391.
Isolation of Organism of Abortus-Melitensis Group from Blood Clot, Serum of Which Failed to Give Agglutination with Bacillus Abortus. Ruth Gilbert and H. Gladys Dacey, New York.—p. 410.
Modification of Fildes Anaerobic Jar. G. D. Cummings, Lansing, Mich.—p. 410.

Pneumonia and Tuberculosis Among Miners.—In a study of 2,603 cases of pneumonia and 238 deaths from tuberculosis among surface workers and miners Kibbey noted that the annual case incidence of pneumonia for ore miners was nearly double that for any other group; surface workers came next, and of all wage earners coal miners suffered least. The story of pneumonia deaths presented an entirely different picture. The fatality rate expressed in deaths per hundred cases was found to be considerably higher for surface workers; 560 cases with 166 deaths, a rate of 29.6; ore miners 143 cases with 33 deaths, rate 23.0; coal miners 127 cases with 29 deaths, rate 22.8; female dependents 994 cases with 180 deaths, rate 18.1; male dependents 779 cases with 102 deaths, rate 13.1. Practically 100 per cent of the coal miners who formed the basis for this investigation have anthracosis, but their pneumonia incidence rate was exactly in proportion to their number in the entire population. A rate of 4.6 cases per thousand, the lowest of any wage earning group, compares quite favorably with 4.3 cases per thousand dependents, which includes all women and children. The fact that coal miners exhibited the lowest pneumonia fatality of any wage earning group would appear to indicate that anthracosis has had no influence either as a predisposing factor or in contributing to fatality. In the operations in which the men worked, several ore mine openings constitute a single operation. Each operation is provided with a large centrally located bath house at which men do their changing. These houses are constantly at temperatures around 80 F., and many of the miners must walk half a mile or more from mine to bath house. Coming from the mine as they do, in clothing dampened with perspiration, they are in certain weather subjected to considerable chilling before reaching a bath house which is kept too hot. Leaving an excessively heated bath house, they are subjected to a second chilling on the walk home or car line, which may be a mile distant. The author believes that these facts more nearly account for the prevalence of pneumonia among ore miners than any condition under which they work, or the presence of possible pneumonoconiosis. The fact that this particular group is more resistant to the destructive processes of pneumonia than are those in whom pneumonoconiosis is absent would appear to argue the soundness of such reasoning. Although coal miners presented the lowest pneumonia fatality rate of any wage earning group, the author's experience is that coal miners die from tuberculosis with nearly three times the frequency of the average for total population and have a mortality rate more than two and a half times that of surface workers. Expressed in deaths per thousand persons annually, the rates are: coal miners, 1.28; ore miners, 1.14; surface workers, 0.46; total population average, 0.44; dependents, 0.36. That the etiology of tuberculosis is in some way intimately bound up with calcium metabolism appears to be reasonably certain. Calcium metabolism, regardless of diet, is impossible in the absence of sunlight. The author tentatively suggests that high death rates from tuberculosis among ore and coal miners might more reasonably be attributed to their deprivation of sunshine than to a condition which apparently does not influence other respiratory diseases.

Tuberculosis in Young Females.—Deacon presents the results of a study of the occupation of young females dying from tuberculosis. During the years 1927, 1928, 1929 and 1930 there were in Michigan 2,630 deaths of females between 15 and 29 due to tuberculosis (all forms). The death certificates of 289 did not contain a statement of occupation, or the statement was too ambiguous to enable one to determine whether or not the person was gainfully employed. These 289 were therefore eliminated and only the 2,341 in which the statement of occupation was fairly clear were considered. The occupations given were: school, 14.1 per cent, and home, 62.3 per cent—not gainfully employed; industry, 23.6 per cent—gainfully employed. Of the 2,341 deaths, 1,787, or 76.4 per cent, were indicated as not gainfully employed; 554, or 23.6 per cent, were gainfully employed. From this showing it is obvious that industrialization is not an important factor in the mortality from tuberculosis among young women. The author sees no reason to believe that there is any more hazard involved when a young woman leaves her home, whether she goes to school or into an office, in most cases working not to exceed eight hours under favorable sanitary environment. Whether one considers housewives, employed persons or students, the problem is in the home; and every one who has experience in public health work realizes that this is the most difficult group to reach.

Archives of Dermatology and Syphilology, Chicago

25: 599-784 (April) 1932

*Moniliasis and Moniliids. J. G. Hopkins, New York.—p. 599.
Search for New Method for Determination of Fungicidal Action of Chemicals: Preliminary Report. H. Sharlit and E. Muskatblit, New York.—p. 615.
*Occupational Melanosis: Report of Case. L. M. Wieder, Milwaukee.—p. 624.
*Superficial Glossitis and Perlèchê Due to Monilia Albicans: Their Association with Other Forms of Moniliasis. L. B. Robinson and Mary Compton Moss, New York.—p. 644.
*Dermatoses Associated with Neurocirculatory Instability, Generalized and Localized Pruritus, Neurodermatitis, Dyshidrosis, Urticaria and Angioneurotic Edema, Lichen Planus, Neurotic Excoriations, Alopecia Areata, Dermatitis Herpetiformis and Scleroderma. S. W. Becker, Chicago.—p. 655.
Poikiloderma Vasculare Atrophicans: Report of Case. B. Usher, Montreal, Canada.—p. 683.
Eczema Solare and Porphyria. H. J. Templeton and C. J. Lunsford, Oakland, Calif.—p. 691.

Moniliasis and Moniliids.—According to Hopkins, the evidence accumulated by many investigators indicates that organisms related to yeasts are the cause of a number of common dermatoses. Recent studies show that at least a majority of these are caused by one well defined species, Monilia albicans. This is the same species that has been found in thrush of the

mouth and in intestinal sprue. The more common skin lesions, interdigital erosion, paronychia and perlèche, are so frequently associated that they apparently constitute one disease, moniliasis of the skin. The intertriginous forms and the vulvitis occur chiefly in diabetes. The fact that patients with moniliasis of the skin harbor the parasite in their alimentary tracts suggests that this focus is a factor in the occurrence and persistence of the skin lesions. Sensitization to Monilia albicans occurs. In a few cases the conclusion seems justified that skin lesions in sensitized persons result from absorption of substances produced by monilias in the alimentary tract or by some other focus of infection. Further study is necessary to determine whether such sensitization to alimentary infection is a frequent or an important factor in the causation of dermatoses.

Occupational Melanosis.—Wieder directs attention to a group of industrial dermatoses in which melanosis is an important feature and which heretofore has received little consideration in the American literature. The rôle of coal tar and petroleum derivatives possessing photodynamic activity as etiologic factors in these cases is reviewed. A case is described in which a benzanthrone-anthraquinone compound and naphthalene containing only a minute trace of an impurity of unknown chemical formula were incriminated as etiologic factors by means of skin tests.

Superficial Glossitis and Perlèche.—Robinson and Moss report a series of twenty-two cases of perlèche in adults, which were complicated by superficial glossitis in six cases, by erosio interdigitalis in eight cases, by paronychia in eight cases, and by dermatitis of the toes in four cases. A superficial glossitis from which Monilia albicans can be isolated occurs sometimes in association with perlèche and sometimes independently. Monilia albicans was recovered from perlèche lesions in thirteen cases and from a number of the complicating mycotic lesions. The authors consider that it is doubtful whether the other species of yeastlike organisms obtained were the cause of the lesion from which they were isolated.

Dermatoses Associated with Neurocirculatory Instability.—Becker presents impressions as obtained from the study of 204 unselected cases of generalized and localized pruritus, neurodermatitis, dyshidrosis, urticaria, angioneurotic edema, neurotic excoriations and alopecia areata. The conditions mentioned seem to be found only in a certain type of person, with the exception of some cases of urticaria. The underlying constitutional background seems to be hereditary but not familial. Many of the patients fall into the so-called neurasthenic groups, with the picture of general asthenia and neurocirculatory instability. The constitutional symptoms are easy fatigability, nervous and mental irritability or depression, hyperkinesia, functional gastro-intestinal disturbances, headache, backache, vasomotor rhinitis and asthma. The combinations of dermatoses in the same person are first angioneurotic edema and urticaria, and opposed various combinations of the others. Therapeutic considerations consist, first, in the removal of the precipitating factors; secondly, in the correction of the underlying irritability and exhaustion, and, thirdly, in palliative therapy. Children should be carefully controlled in order to prevent serious difficulty later in life. The prognosis is better if the dermatosis appears late in life. Cooperation of the patient is a necessary aid to therapy. Without this cooperation, palliative therapy is only temporarily efficacious. From the evidence obtained, it would seem that this group of dermatoses should be given a place in the classification of functional nervous disorders. The author believes that the designation "neurodermatoses" might well be applied to them.

Archives of Neurology and Psychiatry, Chicago

27: 761-986 (April) 1932

Emil Kraepelin, the Man and His Work. S. E. Jelliffe, New York.—p. 761.
Head Injuries; Effects and Their Appraisal: I. Experimental Studies of Induced Convulsions and Ventricular Distortion in Cat. S. B. Wortis, New York.—p. 776.
Id.: II. Rôle of Microglia. L. D. Stevenson, New York.—p. 784.
*Id.: III. Encephalographic Observations. E. D. Friedman, New York.—p. 791.
Id.: IV. Evaluation of Evidence. F. Kennedy, New York.—p. 811.
*Differential Diagnosis of Tumor of Brain: Importance of Considering Renal Hypertension with Choked Disk. F. C. Grant, Philadelphia.—p. 816.
*Intracranial Tumor with Unequal Choked Disk: Relationship Between Side of Greater Choking and Position of Tumor. F. A. Gibbs, Philadelphia.—p. 828.
Internal Jugular Venous Pressure in Man: Its Relationship to Cerebrospinal Fluid and Carotid Arterial Pressures. A. Myerson and J. Loman, Boston.—p. 836.
Traumatic Subdural Hematoma with Particular Reference to Latent Interval. W. J. Gardner, Cleveland.—p. 847.
*Amyotrophic Lateral Sclerosis with Mental Symptoms: Clinicopathologic Study. I. S. Wechsler and C. Davison, New York.—p. 859.
*Unusual Cases of Syphilis of Nervous System: Clinicopathologic Study. N. W. Winkelman, Philadelphia, and J. L. Eckel, Buffalo.—p. 881.
*Chronic Progressive Chorea: Pathogenesis and Mechanism; Histopathologic Study. C. Davison, S. P. Goodhart and H. Shlionsky, New York.—p. 906.

Head Injuries: Encephalographic Observations.—As a result of his studies, Friedman has been led to revise his conception of the so-called traumatic neuroses following serious injury to the skull. On the basis of accumulating experience, one may say that, at least in some of the cases of "traumatic neurosis," definite organic changes that can be visualized in the encephalogram have been brought to light. In this field of medicine, in which diagnosis is frequently difficult, it becomes the duty of the clinician to employ every means at his command in order to arrive at a correct interpretation of the patient's symptom complex. Encephalography offers a valuable means of differentiating between organic and functional syndromes.

Differential Diagnosis of Tumor of Brain.—Grant presents five cases of malignant hypertension. In every instance headache, vomiting and choked disk were noted. In none of the cases at the first examination was sufficient evidence of renal disease shown to force consideration of nephritis as the underlying cause of the hypertension. Three of the patients were too young to make generalized arteriosclerosis seem probable, and only one of the three showed definite evidence of hardening of the peripheral vessels. In the two other subjects, rigidity and pulsation of the temporal, brachial and radial arteries were noted. Two of these young persons without sclerotic peripheral vessels showed such definite neurologic evidence of a cerebral lesion, coupled with papilledema and increased intracranial tension on lumbar puncture, that a diagnosis of tumor of the brain was made. Surgical exploration failed to reveal a tumor. Furthermore, the decompression left at the operation failed to reduce the papilledema, although in one case the headache was relieved. All the patients died within six months after discharge from the hospital, an evidence of the serious prognostic import of papilledema in hypertension.

Intracranial Tumor.—According to Gibbs, in cases of tumor of the brain with unequal choked disk greater choking tends to occur on the same side as the tumor. The incidence of homolaterally greater choking is highest among tumors of the temporal and parietal lobes. The incidence of contralaterally greater choking is highest among occipital tumors. The incidence of homolaterally greater choking is higher among cases of parietal tumor with low grade choked disk than among similar cases with high grade choked disk. The incidence of homolaterally greater choking is lower among cases of occipital tumor with low grade choked disk than among similar cases with high grade choked disk. There is no significant association between the side of greater choking and the side of greater involvement of the third to the seventh cranial nerves.

Amyotrophic Lateral Sclerosis with Mental Symptoms.—Wechsler and Davison call attention to the fact that, in the vast majority of recorded cases, amyotrophic lateral sclerosis is not characterized clinically by definite psychotic manifestations. Most of the cases with such manifestations reported in the literature can better be explained by an incidental association with schizophrenic, manic-depressive or paranoid syndromes or with simple depressions. In older patients the occurrence of definite organic dementia could with more reason be ascribed to the coexistent, but at the same time independent, general cerebral arteriosclerosis. In six cases observed by the authors and very few others the psychosis apparently was the cerebral expression of one generalized pathologic process.

Syphilis of Nervous System.—Winkelman and Eckel report seven unusual cases of syphilitic involvement of the central nervous system. Three cases of gumma are included. In all the process began as a focal meningitis with secondary invasion of the parenchyma. Cerebral syphilis and dementia

paralytica may be combined in the same case, as in a case that terminated as juvenile dementia paralytica. Serologic examinations were negative in two cases, both of the vascular type, one of the brain and one of the cord. The authors emphasize the fact that cerebral syphilis and a toxemia of any sort may produce severe cortical endarteritic changes in the small blood vessels which are indistinguishable from one another.

Chronic Progressive Chorea.—Davison and his associates present three cases of chronic progressive chorea: one of Huntington's type, one of questionable Huntington's type and one arteriosclerotic. Histopathologically, all showed cortical and neostriatal changes. Two of the cases also showed cerebellar changes. The authors made an attempt to interpret the mechanism of chorea on a corticostriatal basis.

Archives of Surgery, Chicago

24: 531-714 (April) 1932

Surgical Treatment of Goiter, with Especial Reference to Operative Technic. M. R. Reid and W. deW. Andrus, Cincinnati.—p. 531.
*Osteoblastic Osteoid Tissue-Forming Tumor of Metacarpal Bone. H. L. Jaffe and L. Mayer, New York.—p. 550.
*Activity of Isolated Intestinal Segments. C. B. Puestow, Chicago.—p. 565.
*Concretio Cordis: II. Cardiolysis for Concretio Cordis. I. A. Bigger, Richmond, Va.—p. 574.
*Squamous Cell Carcinoma of Kidney with Complete Infarction of Kidney as Sequel to Cancerous Thrombosis of Renal Artery. J. Rabinovitch, St. Louis.—p. 581.
*Effect of Hypertonic Solution on Cerebrospinal Fluid Pressure, with Especial Reference to Secondary Rise and Toxicity. G. Milles and F. Hurwitz, Chicago.—p. 591.
Osteogenic Sarcoma. C. F. Geschickter, Baltimore.—p. 602.
Sedimentation Test of Blood in General Surgery, with Especial Reference to Disease in Lower Right Quadrant and Mechanisms Involved. M. Grodinsky, Omaha.—p. 660.
Studies of Physiology of Liver: XXII. Van den Bergh Reaction in Jaundice Following Complete Removal of Liver. J. L. Bollman and F. C. Mann, Rochester, Minn.—p. 675.
*Transphrenic Spread of Disease: Report of Six Cases. E. S. Groseclose and O. Swineford, Jr., University, Va.—p. 681.
Review of Urologic Surgery. A. J. Scholl, Los Angeles; E. S. Judd, Rochester, Minn.; L. D. Keyser, Roanoke, Va.; J. Verbrugge, Antwerp, Belgium; A. A. Kutzmann, Los Angeles, and A. B. Hepler, Seattle.—p. 687.

Tumor of Metacarpal Bone.—Jaffe and Mayer describe an osteoid tissue-forming tumor of a metacarpal that began in a girl, aged 12 years. At first the tumor grew slowly. A biopsy was performed, the histologic sections showing osteoid tissue and numerous osteoblasts. The growth was slow for about the next two years, when it became very rapid. After growing rapidly for about six months, an encapsulated mass measuring 10 by 6.5 by 6 cm. was removed from the hand; section showed almost complete destruction of the metacarpal bone. The peculiar feature of this osteoblastic tumor was its capacity to produce large amounts of osteoid tissue, much of which was free from calcium. The tumor had some features common to osteogenic sarcoma but showed a complete absence of cartilage or cartilaginous elements in numerous sections. It was especially characterized by homogeneity of the histologic picture, a lack of polymorphism of the cells, and an absence of tumor giant cells. There has been no recurrence one and a half years after extirpation. The patient has gained 25 pounds (11.3 Kg.) and has remained free from metastases for over four years after the original biopsy, in March, 1927. The authors believe that the case demonstrates an instance of so-called osteoid chondroma of Virchow, which is an osteoid tissue-producing tumor, the prognosis of which is better than that of osteogenic sarcoma. It is their belief that, had extirpation of the metacarpal bone been delayed much longer, the tumor probably would have undergone biologic transformation and developed the malignant capacities of true osteogenic sarcoma.

Activity of Isolated Intestinal Segments.—Puestow isolated various segments of bowel from the intestinal tract and transplanted them onto the abdomen. It was observed that feeding stimulated an increase of muscular and secretory activity and hyperemia of these segments. Because food did not come in contact with the segments, the stimulus must have been carried by nervous or vascular pathways. Following division of all extrinsic nerves to these intestinal transplants, the response to food could not be clearly demonstrated. This suggested that the increased activity after feeding was at least partially due to extrinsic nervous control. Electrograms made of these various isolated segments of intestine revealed a characteristic curve of altered potential. They also showed a constant rate for a given segment under most conditions studied. The rate was most rapid in duodenal segments, less in jejunal segments and slowest in segments of the lower part of the ileum. Peritonitis and ether anesthesia were found to diminish this rate moderately.

Concretio Cordis.—Bigger considers decortication of the heart a formidable operation but one that is distinctly indicated for the relief of concretio cordis, which without surgical intervention is hopeless. The mortality rate is high and will of necessity continue to be so, but with improved operative technic one of the chief dangers, rupture of the heart, should be greatly diminished. If a satisfactory two-stage operation can be developed, the incidence of postoperative dilatation of the heart should be decreased.

Squamous Cell Carcinoma of Kidney.—Rabinovitch describes a case of squamous cell carcinoma of the kidney. The most interesting features of the case were the invasion of the renal artery by the tumor and the occlusion of its lumen. This resulted in complete infarction of the kidney. Similar instances of total occlusion of the renal artery by a cancerous thrombus have not heretofore been reported in the literature. This observation renders the case, therefore, unique. The various phases of cell metaplasia are discussed.

Spinal Fluid Pressure.—Milles and Hurwitz describe experiments in which they demonstrated that the reduction of cerebrospinal fluid pressure with single doses of hypertonic salt solution and dextrose is transient. A secondary rise occurs which reaches a point much higher than the original level. High concentrations of sodium chloride are definitely toxic. In view of these facts, it is probable that recurrent pressure symptoms and the occasional deaths reported are due to the secondary rise in spinal fluid pressure.

Transphrenic Spread of Diseases.—Groseclose and Swineford report six cases of transphrenic spread of disease. In only one case did the process originate above the diaphragm. In each of the other cases the primary lesion was in the abdomen, and transphrenic spread occurred directly from the under surface of the diaphragm, which was secondarily involved by cancer once, by acute hemorrhagic pancreatitis once, by tuberculosis once and by pyogenic infections twice. The spread was from the left subphrenic region to the left pleura in three cases, from the right subphrenic region to the right pleura in one case, from the right subphrenic region to both pleurae in one case, and from both pleurae and the pericardium to the region of the tail of the pancreas in one case. In one case the spread seemed to be quantitatively much greater on the right than on the left. Oddly enough, in half of the group of cases the transphenic spread occurred only on the left. Of the five pathways described by Lemon, Higgins and Graham by which lymph drains from the diaphragm, the sternal route was apparently illustrated once, the pulmonary route twice, and the fifth route, leading to the peripancreatic region, once. Simple spread from peritoneum to pleura occurred five times. The authors emphasize the importance of being mindful of the probability of transphrenic spread of intrathoracic or intra-abdominal disease. In order to anticipate some of the seemingly bizarre locations of the secondary transphrenic lesions, it is necessary to know the various routes by which materials reaching the rich diaphragmatic lymphatic plexus are transported to the blood stream.

California and Western Medicine, San Francisco

36: 217-304 (April) 1932

Circulating Medical Library Service for Physicians: Comments on Iowa and Wisconsin Experiences. F. B. van Zandt, San Francisco.—p. 217.
Certain Economic Phases of Medical Practice. W. J. Stone, Pasadena.—p. 220.
*Fractures of Knee: "Bumper Type." N. A. Cary, Oakland.—p. 226.
*Ruptured Bladder: Method of Diagnosis: Report of Cases. H. W. Martin, Los Angeles.—p. 230.
Organized Medical Care: Its Relation to Persons of Low Income. R. L. Wilbur, Washington, D. C.—p. 233.
Contract Practice. R. G. Leland, Chicago.—p. 234.
Essays on History of Embryology. A. W. Meyer, San Francisco.—p. 241.

Fractures of Knee.—According to Cary, "bumper fractures of the knee" is the term applied to designate a complex lesion occurring when a person is struck by an automobile bumper or otherwise with sufficient force to produce a comminuted

fracture of the head of the fibula, a fracture of the external tuberosity of the tibia with an avulsion of the tibiofibular joint and a rupture of the external lateral ligament of the knee joint. He emphasizes the fact that in this condition complete reduction is just as essential for a stable joint with good function as is a complete reduction of a Colles' or Pott's fracture. A method of treatment is outlined which he has found highly satisfactory to date. No special skill is required to obtain reduction. Caution is directed to a careful consideration of the peroneal nerve and to avoid rough pounding. With this method the period of disability has been reduced to half the usual time required, and permanent disabilities have been greatly reduced.

Ruptured Bladder.—Martin describes a method of diagnosis of ruptured bladder which has proved so reliable that he recommends its trial. The steps in the procedure are as follows: The patient should have an opportunity to void urine. The urine, if voided, should be examined microscopically for blood. If the patient is unable to void, a catheter is passed and the bladder urine is drawn off. If a catheter cannot be passed, a urethrogram should be taken to demonstrate the nature of the urethral complication or injury. The bladder should then be filled with sterile 5 per cent sodium iodide solution that has been boiled. The bladder should be filled to the point of discomfort, or, if this sensation is not reached, one stops at 300 cc., the amount injected having been carefully noted. A roentgenogram should then be taken, the patient being so placed that the entire bladder outline is shown on the plate. The sodium iodide solution should then be permitted to drain out of the bladder without any pressure being exerted, after which another picture should be taken. Air may be injected now in order to get a contrast cystogram. This will show the amount and location of any of the extravasated mediums, and thus another bit of evidence will be obtained. When the films are developed, one will either see the regular line of a normal bladder or a distorted, indistinct picture with extravasated iodide helping to outline the ruptured bladder.

Georgia Medical Association Journal, Atlanta

21: 127-177 (April) 1932

Unexpected Postoperative Infections. R. M. Harbin, Rome—p. 127.
Different Phases of Encephalitis Lethargica. L. M. Gaines, Atlanta.—p. 134.
Diagnosis of Mediastinal Tumor: Case Report. R. C. Pendergrass, Americus.—p. 137.
Pellagra. C. H. Ferguson, Thomasville.—p. 139.
Narcolepsy: Report of Case with Symptomatic Relief. J. W. Brittingham, Augusta, and T. E. Rogers, Macon.—p. 142.
Spontaneous Pneumothorax. C. H. Holmes, Atlanta.—p. 143.
Diagnosis and Treatment of Common Skin Diseases, with Especial Reference to Precancerous Lesions. J. M. Sigman, Macon.—p. 146.

Journal of Biological Chemistry, Baltimore

96: 1-283 (April) 1932. Partial Index

*Study of Certain Metals in Prevention of Nutritional Anemia in Rat. J. M. Orten, F. Aline Underhill and R. C. Lewis, Denver.—p. 1.
Polycythemia in Rat on Milk-Iron-Copper Diet Supplemented by Cobalt. J. M. Orten, F. Aline Underhill, E. R. Mugrage and R. C. Lewis, Denver.—p. 11.
Study of Blood Glutathione. V. Schelling, Detroit.—p. 17.
Studies on Ketosis: I. Sexual Variation in Starvation Ketosis. H. J. Deuel, Jr., and Margaret Gulick, Los Angeles.—p. 25.
Metabolism of Phospholipids: V. Relationship Between Amount of Fat Ingested and Degree of Unsaturation of Phospholipids and Neutral Fat in Tissues of Rat. R. G. Sinclair, Rochester, N. Y.—p. 103.
Antineuritic Vitamin: II. Removal of Impurities by Oxidizing Agents. R. J. Block and G. R. Cowgill, New Haven, Conn.—p. 127.
*Mucoprotein as Normal Constituent of Gastric Juice. D. R. Webster and S. A. Komarov, Montreal, Canada.—p. 133.
*Vital Need of Body for Certain Unsaturated Fatty Acids: I. Experiments with Fat-Free Diets in Which Sucrose Furnishes Sole Source of Energy. H. M. Evans and S. Lepkovsky, Berkeley, Calif.—p. 143.
Id.: II. Experiments with High Fat Diets in Which Saturated Fatty Acids Furnish Sole Source of Energy. H. M. Evans and S. Lepkovsky, Berkeley, Calif.—p. 157.
Sparing Action of Fat on Vitamin B: II. Rôle Played by Melting Point and Degree of Unsaturation of Various Fats. H. M. Evans and S. Lepkovsky, Berkeley, Calif.—p. 165.
Id.: III. Rôle Played by Glycerides of Single Fatty Acids. H. M. Evans and S. Lepkovsky, Berkeley, Calif.—p. 179.
*Crystalline Vitamin D. C. E. Bills and F. G. McDonald, Evansville, Ind.—p. 189.
*Calcium and Phosphorus Studies: I. Effect of Calcium and Phosphorus of Diet on Tetany, Serum Calcium and Food Intake of Parathyroidectomized Rats. D. H. Shelling, with assistance of Dorothy E. Asher, Baltimore.—p. 195.
*Id.: II. Effect of Diet and of Viosterol on Tetany and on Serum Calcium of Parathyroidectomized Rats. D. H. Shelling, with assistance of Dorothy E. Asher, Baltimore.—p. 215.
Id.: III. Source of Excess Serum Calcium in Viosterol Hypercalcemia. D. H. Shelling, with assistance of Dorothy E. Asher, Baltimore.—p. 229.
Diffusible and Nondiffusible Blood Serum Calcium Following Intravenous Injections of Calcium Salts. R. G. Smith and Helen R. Sternberger, Ann Arbor, Mich.—p. 245.
Carbohydrate Changes During Anaerobiosis of Mammalian Muscle. Gerty T. Cori, Buffalo.—p. 259.
Osmotic Behavior of Water of Blood Serum. F. W. Sunderman, Philadelphia.—p. 271.

Prevention of Nutritional Anemia.—Orten and his associates describe experiments in which they demonstrated that inorganic iron fails to prevent the development of a nutritional anemia in the rat on a milk diet, whereas iron supplemented by copper permits the maintenance of an approximately normal hemoglobin level. Iron supplemented by manganese fails to prevent the development of nutritional anemia. A mixture of manganese, cobalt, nickel and zinc, supplementing iron, does not have a prophylactic action in nutritional anemia, while the same mixture plus copper prevents a decrease in the hemoglobin level. Evidence of any significant toxic effect of manganese, cobalt, nickel or zinc was not observed. Of all the metals studied, copper alone has the ability to supplement iron in preventing the nutritional anemia of the rat.

Mucoprotein as Normal Constituent of Gastric Juice.—Webster and Komarov believe sufficient data have been advanced to establish the presence in the freshly secreted gastric juice of a protein exhibiting the general properties of a mucoprotein. The striking similarity in the elementary composition of different samples obtained from several animals and its variance from that of the mucus of the surface epithelium point to this being a *sui generis* chemical body, secreted by the cells of the gastric glands themselves.

Unsaturated Fatty Acids in Diet.—Evans and Lepkovsky confirm the fact that a specific deficiency disease is produced on rigidly fat-free diets and is cured by the addition of certain unsaturated fatty acids. Vitamin B was definitely ruled out as a limiting factor in this deficiency. Corn starch and rice starch were effective in curing the deficiency, whereas potato starch was ineffective. The curative carbohydrates owe their effectiveness to their slight but important content in unsaturated fatty acids—presumably linoleic acid. Hog liver glycogen, whether prepared by hydrolysis with alkali or precipitation with trichloracetic acid, was ineffective.

Crystalline Vitamin D.—Bills and McDonald state that translation into international units of the potencies reported for several crystalline preparations of vitamin D reveals wide variation in antirachitic value. Under suitable conditions a resinous preparation can pass into the crystalline state without change of purity. The crystalline state is evidence of relative, not absolute, purity in vitamin D. The best crystalline preparations as yet described are probably isomorphous mixtures containing a large percentage of inert material.

Calcium and Phosphorus Studies: I.—Shelling reports that the calcium and phosphorus content of the diet is a determining factor in the presence or absence of tetany in parathyroidectomized rats. Low calcium or high phosphorus diets are conducive to parathyroprivic tetany, while high calcium or low phospharus diets are ameliorative. The serum calcium concentrations vary with the severity of the tetany and with the calcium and phosphorus intake. Cachexia parathyreopriva was found to depend on the food intake. Parathyroidectomized rats refuse to eat tetany-inducing diets and thus lose weight, but they consume optimal amounts of foods which relieve or prevent their tetanic manifestations. The anorexia was present when dietary phosphorus was in a form that could be utilized by the animal organism but absent when the phosphorus salts could not be utilized. Sodium metaphosphate and thiosulphate belong to the latter group. An analogy is drawn between the anorexia of parathyroidectomized rats on tetany-inducing diets and the vomiting of parathyroprivic dogs on similar rations. Attention is called to the importance of phosphorus as a factor in the study of parathyroid tetany.

Id.: II. Effect of Diet and of Viosterol on Tetany of Parathyroidectomized Rats.—According to Shelling, viosterol in fairly large doses is capable of raising the serum cal-

cium levels and of ameliorating the symptoms of tetany of parathyroidectomized rats kept on very low calcium diets. Large doses of viosterol may raise the serum calcium of parathyroidectomized rats from tetanic to hypercalcemic levels, even in the absence of either calcium alone or of both calcium and phosphorus from the food. These experiments would seem to indicate that the activity of viosterol in raising the serum calcium levels may be independent of the parathyroids. The author discusses the relation of the parathyroids to the activity of therapeutic doses of viosterol.

Journal of Bone and Joint Surgery, Boston

14: 229-470 (April) 1932

Operative Treatment of Fractured or Displaced Semilunar Cartilage: Comparison of Opinions Concerning Removal of Meniscus. M. Boppe, J. Braine and A. Mouchet, Paris, France; P. J. Erlacher and A. Wittek, Graz, Austria; R. Galeazzi, Milan, Italy; W. E. Gallie, Toronto, Canada; J. Hass, Vienna, Austria; M. S. Henderson, Rochester, Minn.; M. Jansen, Leiden, the Netherlands; A. Jirásek, Prague, Czechoslovakia; R. Jones and T. P. McMurray, Liverpool, England; S. Kostlivý, Bratislava, Czechoslovakia; J. Petřivalský, Brno, Czechoslovakia; J. L. Potter, Evanston, Ill.; V. Putti, Bologna, Italy; W. O. Sherman, Pittsburgh; F. Steinmann, Bern, Switzerland; L. Tavernier, Lyons, France, and H. Turner, Leningrad, U. S. S. R. —p. 229.

Consideration of Relative Effectiveness of Operative Procedures for Paralytic Talipes Calcaneus. R. Whitman, New York.—p. 242.

* Streptococcus Viridans Osteomyelitis. E. L. Compere, Chicago.—p. 244.

* Trochanteric Transplantation in Treatment of Fractures of Neck of Femur. E. Jones, Los Angeles.—p. 259.

Backache: Anatomic Consideration. T. A. Willis, Cleveland.—p. 267.

* Importance of Periarticular Innervation in Pathologic Physiology of Sprained Joints. A. Brunschwig, Chicago, and A. Jung, Strasbourg, France.—p. 273.

Congenital Dislocation of Hip in Older Subjects; Based on Study of Sixty-Six Open Operations. P. C. Colonna, New York.—p. 277.

* Congenital Dislocation of Hip Treated by Open Operation: Report of Seventy-Two Cases. M. B. Howorth and H. W. Smith, New York. —p. 299.

Perthes' Disease. L. E. Snodgrass, Philadelphia.—p. 314.

Range of Active Abduction and Lateral Rotation at Hip Joint of Men. A. R. Boscoe, San Francisco.—p. 325.

Plastic Operation for Relief of Recurrent Slippings and Dislocation of Patella. L. C. Wagner, New York.—p. 332.

Operative Treatment of Clawfoot. C. H. Heyman, Cleveland.—p. 335.

Calcinosis Interstitialis Universalis. G. F. Skossogorenko, Kiev, the Ukraine, U. S. S. R.—p. 339.

Pin Fixation in Dislocation at Hip Joint. S. L. Haas, San Francisco. —p. 346.

Arthroscopy of Elbow Joint: Cadaver Study. M. S. Burman, New York.—p. 349.

* Longitudinal Fractures of Patella. P. W. Lapidus, New York.—p. 351.

Making a New Ligament in Ankle Sprain. H. Nilsonne, Stockholm, Sweden.—p. 380.

Rare Accessory Bone of Foot. A. B. Ferguson, New York.—p. 382.

Unilateral Subluxation of Lumbosacral Joint. S. Kleinberg, New York. —p. 384.

Lateral Dislocation of Vertebra: Report of Three Cases. J. D. Lawson, Woodland, Calif.—p. 387.

Dislocation of Knee Joint: Report of Case. H. H. Ritter, New York. —p. 391.

Radio-Ulnar Synostosis: Historical Review and Case Report. S. Fahlstrom, Chicago.—p. 395.

Congenital Bilateral Radio-Ulnar Synostosis: Report of Case. B. N. E. Cohn, Pittsburgh.—p. 404.

Giant-Cell Tumor of Os Calcis: Report of Case Treated by Resection and Tendon Transplantation. L. M. Miltner and F. E. Wan, Peiping, China.—p. 406.

Giant-Cell Tumor (Sarcoma?) of Astragalus. A. J. Davidson and A. D. Kurtz, Philadelphia.—p. 410.

Multiple Spontaneous Fractures of Unknown Origin. E. B. Kaplan, New York.—p. 412.

Rupture of Biceps Tendon. H. D. Sonnenschein, New York.—p. 416.

Restoration of Bony Density and Contour Following Extreme Atrophy and Collapse of Fifth and Sixth Cervical Vertebrae. S. Selig and B. Eliasoph, New York.—p. 417.

Conservative Treatment of Incomplete Dislocation of Acromioclavicular Joint. A. H. Trynin, Brooklyn.—p. 421.

Special Saw and Retractor for Plastic Operation on Femur. G. K. Coonse, Columbia, Mo.—p. 425.

Bone Skids. R. M. Yergason, Hartford, Conn.—p. 427.

Streptococcus Viridans Osteomyelitis.—Compere discusses the etiology of osteitis that is characterized by a fibroblast and giant-cell proliferation with bone destruction and new bone formation. He reports a case in which a strain of green-producing streptococcus grew in cultures of a lesion in the neck of the astragalus, which presented a microscopic picture similar to that of localized osteitis fibrosa without cyst formation. Clinically and bacteriologically it was a low-grade pyogenic infection and was classed as Streptococcus viridans osteomyelitis. He also reports a second case, which was clinically and pathologically similar to the first, except for bone proliferation, but in which the cultures were negative. That trauma may be a factor in localizing the infection is again suggested by these cases, but the opinion is expressed that reaction to trauma and hemorrhage could not alone account for the cortical absorption and the extensive new bone formation noted in the second case.

Trochanteric Transplantation in Fractures of Femoral Neck.—Jones summarizes the advantages of open operation by the trochanteric bone-graft method in fractures of the neck of the femur as follows: (1) early and accurate replacement of displaced fragments with assurance that no interposition of tissue exists; (2) bridging of the fracture line with an autogenous bone graft, providing firm internal fixation, the graft also acting as a source of calcium for the healing granulation tissue, and (3) early reestablishment of blood supply between the head and neck of the femur in an area where blood supply is minimal. He particularly emphasizes the conservatism of this method and the ease with which through a single incision the hip joint is widely exposed, an adequate bone graft is obtained from the trochanter as part of the operative approach, and the direction and position of the transplant are accurately determined.

Periarticular Innervation in Sprained Joints.—According to Brunschwig and Jung, the sensibility of a joint is primarily a periarticular sensibility, due to the abundance of nerve endings in the joint capsules and periarticular ligaments. In sprains, pain is due primarily to trauma of the periarticular innervation. Reflex muscular rigidity, involving the injured joint, also has its origin in the traumatized nerves of the joint capsule and ligaments. Periarticular injections of procaine hydrochloride have a definite therapeutic value in the treatment of sprains. With the pain and reflex muscular rigidity abolished, almost normal function is possible. In some instances the improvement is more or less permanent; in other cases several injections are necessary.

Congenital Dislocation of Hip.—A study of eighty-two open reductions of congenital dislocation of the hip, with a follow-up examination of seventy-two of the hips, is presented by Howorth and Smith, with details of the preoperative examination and treatment, the operative observations and procedure, postoperative care, and the results several years after operation. It is definitely shown that a fairly large percentage of congenital dislocations of the hip cannot be reduced, or the reduction maintained, by closed operation because of anatomic abnormalities about the acetabulum. It is further demonstrated that roentgenograms taken with the patient standing and under traction, as well as the ordinary recumbent views, are essential for a thorough study of these hips both before and after operation. It is particularly important that the pathologic condition and mechanism at the hip be carefully studied at operation. It is the authors' practice to study the hip at operation on exposure of the capsule, after opening the capsule, and after removing the ligamentum teres, to determine the factors interfering with reduction and stability, and they test the stability of the hip after reduction with upward pressure on the leg during gradual adduction and in various positions of rotation. The rotation procedure is valuable in determining the necessity for correction of anteversion. Furthermore, there is so much individual variation in these hips that they cannot be grouped together indiscriminately and compared superficially in attempts to present the best apparent results.

Longitudinal Fractures of Patella.—Lapidus calls attention to typical longitudinal fracture of the patella in a vertical sagittal plane, usually over the junction of the outer and middle fourths of the patella. This fracture is not as uncommon as is usually believed, but it is rarely recognized. Correct diagnosis of longitudinal fracture of the patella is important for the purpose of proper treatment, especially in legal cases. The clinical picture is clear cut: history of injury, localized linear tenderness over the lateral border of the patella, effusion in the knee joint (usually hemorrhagic), comparatively negligible disability. Special technic of roentgenography of the patella should be used in every case with these symptoms in which there is a suspicion of longitudinal fracture. Both knees should always be roentgenographed in order to differentiate the fracture from congenital anomaly of the patella. The therapeutic value of repeated aspiration of the effusion in the knee joint is empha-

sized in cases of longitudinal fracture of the patella. Longitudinal fracture of the patella may lead to a quite prolonged disability when overlooked. If properly recognized and treated, complete recovery within six to eight weeks may be expected. Operative treatment should not be employed in these fractures.

Journal of Comparative Psychology, Baltimore

13: 143-311 (April) 1932

Experiment on Backward Associations in Animal Learning. M. E. Bunch and W. R. Lund, St. Louis.—p. 143.
Analysis of Electrical Stimulus Producing a Shock. K. F. Muenzinger and F. C. Walz, Denver.—p. 157.
Mechanism of Vision: V. Structure and Image-Forming Power of the Rat's Eye. K. S. Lashley, Chicago.—p. 173.
Maze Learning of Turtles. O. L. Tinklepaugh, New Haven, Conn.—p. 201.
Multiple Delayed Reaction with Chimpanzees and Monkeys. O. L. Tinklepaugh, New Haven, Conn.—p. 207.
Ontogeny of Embryonic Behavior in Aves: III. Structural and Environmental Factors in Embryonic Behavior. Zing Yang Kuo, Nanking, China.—p. 245.
Note on Brightness Vision in White Rat. J. E. Slater and N. L. Munn, Pittsburgh.—p. 273.
Behavior of Albino Rats in Choosing Food and Stimulants. M. F. Hausmann, Baltimore.—p. 279.

Journal of Lab. and Clinical Medicine, St. Louis

17: 611-730 (April), 1932

Sputum Examination in Pulmonary Tuberculosis. M. Pinner, Tucson, Ariz.—p. 611.
*Isolation and Identification of Pathogenic Bacteria in Feces. L. C. Havens, Montgomery, Ala.—p. 628.
*Examination and Identification of Protozoa. E. C. Faust, New Orleans.—p. 639.
Intestinal Protozoa in Clinical Medicine. K. M. Lynch, Charleston, S. C.—p. 661.
*Bacterial Mutations. F. d'Herelle and Ruth Beecroft, New York.—p. 667.
Bacteriophage in Clinical Medicine. N. W. Larkum, Lansing, Mich.—p. 675.
Observations on Bacteriophage: III. Treatment of Colon Bacillus Infections of Urinary Tract by Means of Subcutaneous and Intravesical Injections of Bacteriophage Filtrates: Detailed Case Reports: Methods for Preparation of Filtrates. D. M. Cowie and W. C. Hicks, Ann Arbor, Mich.—p. 681.

Pathogenic Bacteria in Feces.—Havens considers the detection of pathogenic bacteria in feces as one of the most complicated bacteriologic problems which a diagnostic laboratory encounters. Their isolation, in the first place, is attended by many technical pitfalls, and any significant organisms which may be found require intelligent and careful work for their identification. There are many intestinal bacteria which closely resemble the known pathogens but which so far have no definitely ascribed rôle. Their significance is uncertain and their presence is often confusing. Hence, one can hardly be too careful in the procedures used for purposes of identification. In the majority of instances, of course, such as typhoid, the offending organism is readily identified by comparatively simple cultural and agglutinative reactions. But when one approaches the paratyphoid group and, particularly, the dysenteries, skill and experience are needed. It is here, in this group of diseases, owing to their comparatively infrequent occurrence and their vague clinical symptoms, that the laboratory is called on to establish the diagnosis. Thus, even though such examples appear with comparative infrequency, it is nevertheless essential that the laboratory be prepared to make an intelligent examination.

Examination and Identification of Protozoa.—According to Faust, the protozoa found in human tissues and exudates include forms belonging to all four major groups of the phylum Protozoa, namely, the Rhizopoda, as illustrated by Endamoeba histolytica; the Mastigophora, as illustrated by the intestinal flagellates and the trypanosomes; the Sporozoa, as illustrated by the malaria plasmodia, and the Ciliata, as illustrated by Balantidium coli. Some of these organisms are strictly tissue parasites; others may be regarded as facultative pathogens, and still others are harmless forms of a coprozoic nature living in or passing through the intestinal tract. For purposes of convenience the author considers these protozoa under two categories, (1) those living in the intestinal tract and adjacent organs, and (2) those primarily involving the hematopoietic organs, blood stream and other body tissues.

Bacterial Mutations.—D'Herelle and Beecroft call attention to the fact that variations which occur among living beings may result, in general, from three different phenomena: 1. The existence of a life cycle such as one finds in the case of protozoa and insects. This phenomenon is easy to recognize, for it is cyclic; the variations are "ordinate." All the characters vary together as a whole. Moreover, in a species which has a life cycle, all the individuals suffer the same variation when placed in identical environments. 2. The adaptation to new external conditions. This phenomenon is not cyclic. One can produce easily such variations with bacteria when they are cultivated in what one might term "abnormal" mediums; but generally such variations are transitory. The character "sporulation" is the only one that undergoes a permanent modification after a strain has been cultivated or exposed to the presence of certain antiseptics. 3. Adaptation to new internal conditions. New internal conditions always result from the subjection of an organism to a parasite. Such parasitism is termed "symbiosis" when the host adapts itself to this new condition. This adaptation is always correlative to modifications of the characters of the host (as well as modifications of the characters of the parasite). The authors describe investigations which show that the principal cause of variations among bacteria is a result of a symbiosis and certainly not the result of a life cycle. The variations are not cyclic but appear in a disorderly fashion. What is more characteristic is that each character may vary by itself as an entity, without having any repercussive effect on the other characters. If one considers, for example, the three characters "virulence," "agglutinability" and "fermentation," one observes that there is no relation between the variation of one of them and the variation of the others.

Journal of Pharmacology & Exper. Therap., Baltimore

44: 385-497 (April) 1932

Influence of Sodium Phenobarbital (Sodium Luminal) on Cardiac Action of Pituitary Extract. B. B. Raginsky and R. L. Stehle, Montreal, Canada.—p. 385.
Note Referring to Paper of Frank Wokes: Method of Comparing Absorption of Calcium Preparations. L. Kofler and R. Fischer.—p. 393.
Remarks on Preceding Note. F. Wokes.—p. 395.
Amide Nitrogen of Blood: VI. Reply to Nash and Williams. S. Bliss, New Orleans.—p. 397.
Toxic Action of p-Diazoiminobenzene Hydrochloride and of Its Additive Compound with Cupric Chloride. A. C. White.—p. 409.
*Studies on Pharmacology of Metaphen and Acriflavine. P. Jeanette Crittenden, Chicago.—p. 423.
Effect of Phosphate and Bicarbonate Buffers on Ionization of Calcium Salts in Physiologic Salt Solutions. W. F. von Oettingen and R. E. Pickett, Cleveland.—p. 435.
Chemotherapy of Quinoline Compounds: III. Action of Certain Quinoline Compounds on Paramecia. P. Brahmachari, U. Brahmachari and R. Banerjea, Calcutta, India.—p. 445.
*Further Studies of Control of Experimentally Produced Convulsions. H. M. Keith, Rochester, Minn.—p. 449.
Stimulant Action of Nicotine on Spleen. F. D. McCrea, Cleveland.—p. 457.
Pharmacologic Action of Some New Choline Derivatives in Relation to Their Chemical Constitution. W. F. von Oettingen and D. F. Eveleth, Cleveland.—p. 465.
Intact Intestine in Nonanesthetized Dogs as Affected by Anthraquinone (Emodin) Cathartics. C. M. Gruber, W. T. K. Bryan and L. K. Richardson, St. Louis.—p. 479.

Pharmacology of Metaphen and Acriflavine.—Crittenden reports that metaphen administered intravenously, except in enormous doses, does not have any effect on the blood pressure, heart rate and respiration of either barbitalized or unanesthetized dogs. In general, intravenous injection of therapeutic doses (0.15 mg. per kilogram) causes a marked leukocytosis, accompanied by a proportional increase in the different forms of leukocytes. In one dog out of ten a leukopenia resulted. It has no effect in similar doses on the fragility of erythrocytes. The minimum lethal dose of metaphen in dogs is 3.5 mg. per kilogram, which on the basis of its mercury content is equivalent to the minimum lethal dose of mercuric chloride. Certain preparations of acriflavine are definitely toxic, causing marked changes in the heart rate, circulation and respiration, and nausea and vomiting in intravenous doses of from 2 to 5 mg. per kilogram. A neutral preparation of acriflavine can be prepared which in doses of from 1 to 2 mg. per kilogram causes either no or only slight changes in the heart rate, respiration and blood pressure. The author believes that preparations of acriflavine should be tested on unanesthetized animals before they are used for intravenous therapy. Even the least toxic preparations of acriflavine in small doses stimulate and in larger doses depress the peripheral vagal mechanism in the heart. The author's

results indicate that the chief point of action of acriflavine on the blood pressure is peripheral.

Experimentally Produced Convulsions.—Keith states that in rabbits the anticonvulsive effect of diacetone alcohol given by mouth is definite. A considerably larger amount of it is required than is required of phenobarbital to produce a similar effect. The latter, however, is much more toxic in larger doses and causes considerably more irritability to sensory stimuli. The anticonvulsive properties of diacetone alcohol depend on the acetone portion of the molecule.

Kentucky Medical Journal, Bowling Green

30: 167-236 (April) 1932

Difficulties in Diagnosis of Empyema and Surgical Considerations. G. G. Altman, Louisville.—p. 169.
Roentgen Diagnosis of Empyema. V. Blythe, Paducah.—p. 172.
Surgical Treatment of Empyema. C. C. Howard, Glasgow.—p. 174.
Etiology in Diagnosis of Heart Disease. O. P. Nuckols, Pineville.—p. 179.
Certain Problems in Treatment of Fractures. M. D. Flanary, Pikeville.—p. 183.
Preoperative and Postoperative Treatment in Abdominal Surgery. I. Abell, Louisville.—p. 187.
Criteria for Diagnosis of Heart Disease. W. B. Troutman, Louisville.—p. 194.
Roentgen Ray in Diagnosis of Cardiac Disease. J. C. Bell, Louisville.—p. 196.
Operative Risk in Heart Disease. E. F. Horine, Louisville.—p. 197.
Treatment of Heart Diseases. S. C. Frankel, Louisville.—p. 199.
Effect of Disease on Calcium Content of Blood. J. E. Winter, Louisville.—p. 204.
Arterial Conditions of Surgical Importance. J. G. Sherrill, Louisville.—p. 210.
Intravascular Complications in Surgery: Venous Complications. W. Hunie, Louisville.—p. 215.
Id.: Pulmonary System. L. Frank, Louisville.—p. 219.
Was It an Error in Diagnosis? C. G. Lucas, Louisville.—p. 226.
Rupture of Rectus Abdominis Muscle. M. Flexner, Louisville.—p. 230.
Perthes' Disease: Case Report. O. R. Miller, Louisville.—p. 231.
Torsion of Normal Ovary and Tube with Rupture of Ovary and Review of All Literature to Date: An Addendum. C. Baron, Covington.—p. 233.

Medical Bull. of Veterans' Adm., Washington, D. C.

8: 257-330 (April) 1932

*Surgical Treatment of Pulmonary Tuberculosis. C. A. Hedblom and W. H. Watterson.—p. 257.
*Spinal Anesthesia: Report of Its Use in Five Hundred and Eighteen Cases. V. Roberts, S. B. Woodward and W. F. Coakley.—p. 267.
Intravenous Pyelography with Use of Iopax. C. D. Allen and S. L. Edwards.—p. 277.
Massive Collapse of Lung, with Spontaneous Pneumothorax. W. H. Crede.—p. 280.
Hereditary Factors in Schizophrenia: Comparison of Data. P. M. Jerrell.—p. 287.
Malaria Therapy in Agitated Cases of Paresis. R. T. O'Neil.—p. 291.
*Early Diagnosis of Neurosyphilis. R. S. Hubbs.—p. 295.
*Death Certificate and Causes of Death. G. H. Crofton.—p. 298.
Dental Foci in Relation to Ocular Disease: Case Reports. J. P. Cassity.—p. 304.

Surgical Treatment of Pulmonary Tuberculosis.—According to Hedblom and Watterson, phrenic operations alone usually fulfil only partially the requirements of active treatment of tuberculosis, and they are inferior to other methods of collapse therapy, especially in their effect on cavities in the upper lobe; therefore phrenic exeresis as an independent intervention has only a limited application. Attention to certain symptoms is of value in handling cases. Thus, cardiac embarrassment following thoracoplasty due to air or fluid in the pleural cavity may be relieved by aspiration. Even if the heart can withstand any added load because of the collapsed condition of the chest wall and intrapleural air or fluid, the ultimate degree of chest wall collapse following thoracoplasty may be much interfered with. The authors believe that artificial pneumothorax treatment should last for at least two years unless it is complicated by adhesions, in which case major surgical procedures should be considered to maintain therapeutic collapse.

Spinal Anesthesia.—Roberts and his associates review a series of 518 cases of spinal anesthesias from the standpoint of age of patient, of type of operation, of risk, and of technic of administration, with a discussion of postoperative reactions and of the advantages and disadvantages of spinal anesthesia. No mortality attributable to the anesthetic occurred in this series. One standard technic, the Labat, was used throughout. A carriage convertible into several positions was used. The patient may be quickly put in the Trendelenburg position and transported in that position, which is of prime importance when spinal anesthesia is employed. While recent literature offers experimental evidence as to possible injury to the central nervous system and its coverings due to spinal anesthesia, clinically the authors have been unable to observe any permanent changes.

Early Diagnosis of Neurosyphilis.—Hubbs states that in the vast majority of cases at the time the first symptoms of neurosyphilis appear there are neurologic changes present which help to confirm a diagnosis of this disease. In the making of a diagnosis of neurosyphilis in the early stages of the disease a physician is aided by the fact that many such patients have positive blood Wassermann and Kahn reactions. Yet he must not consider neurosyphilis ruled out by negative blood reactions, since 8.8 per cent of a group of patients studied by the author had negative blood Wassermann or Kahn reactions at or near the time of onset.

Death Certificate and Causes of Death.—Crofton gives the following reasons why the facts as stated on the death certificate by the attending physician may be of the greatest legal and social importance: 1. Pensions or life insurance may depend on proper evidence of the facts and cause of death. 2. Certificates of death, or certified copies, are constantly required in courts and elsewhere to establish necessary facts. 3. Titles and rights to inheritance may be jeopardized by the failure of records. 4. Deaths should be registered so that public health agencies — national, state and municipal — may know the causes of death and act promptly to prevent epidemics. 5. Deaths should be registered promptly in order that the success or failure of all measures attempted in the prevention of disease may be accurately determined. 6. Deaths should be registered, that individual cities and localities may learn their own health conditions by comparison with the health condition of other communities and determine thereby the best courses of public activity. 7. Deaths should be registered, that homeseekers and immigrants may be guided in the selection of safe and healthful homes.

Medical Journal and Record, New York

135: 365-416 (April 20) 1932

Bactericidal Power of Antitoxins and Its Limitations: Clinical and Bacteriologic Study. F. Herb, Chicago.—p. 365.
Acute Urinary Retention Due to Hematocolpometra. A. H. Mouradian, Greenwich, Conn.—p. 369.
Detoxication and Degenerative Diseases. A. B. Jackson, Washington, D. C.—p. 370.
Modern Conception of Deafness. H. Hays, New York.—p. 374.
Electrocardiogram in Coronary Occlusion. L. H. Sigler, Brooklyn.—p. 376.
Constitutional Angiohypotonia or Idiopathic Permanent Arterial Hypotension. A. Ferrannini, Naples, Italy.—p. 381.

New England Journal of Medicine, Boston

206: 771-826 (April 14) 1932

Jacksonian Attacks and Brain Tumor. E. W. Taylor, Boston.—p. 771.
Metabolic Rate in "Hypnotic Sleep." J. C. Whitehorn, Waverly, Mass.; H. Lundholm, Durham, N. C.; E. L. Fox, Boston, and F. G. Benedict, Washington, D. C.—p. 777.
Physician's Fees and Hospital Bills. M. M. Davis, Chicago.—p. 781.
Management of Permanent Colostomies. W. M. Shedden, Boston.—p. 792.
Acute Salpingitis in Pregnancy. J. D. Stewart, Boston.—p. 800.

New York State Journal of Medicine, New York

32: 437-514 (April 15) 1932

Compulsory Health Insurance Abroad. E. Koffler, New York.—p. 437.
*Radium Poisoning. F. B. Flinn, New York.—p. 446.

Radium Poisoning.—Flinn states that, when radium is absorbed into the body, the immediate surrounding tissue is subjected to a bombardment of alpha and beta particles as well as to gamma rays. These alpha and beta particles are destructive to tissues under certain conditions. The alpha particle is the most powerful physical agent known to man. The change in the blood picture is due to the action of the radium on the bone marrow and lymph nodes. Anemia and drop in white cells finally result and the drop in white cells may indicate the terminal end. The blood picture in human beings varies somewhat during the clinical history and in individual cases, so that there is no characteristic radium blood picture. Anisocytosis, poikilocytosis and nucleated red cells are frequently seen. The

radium tends to cause the cells of the body to revert to the primitive cells, as is seen on histologic examination of tissues. A certain percentage of cases terminate in sarcoma, generally those in which small amounts of radium have been present over a long period of time. Because the blood picture is unreliable for the detection of radium poisoning, dependence must be placed on the electroscope. In the treatment of the condition, operations are contraindicated. In jaw cases the wound should be kept draining as freely as possible. Liver, iron injections and blood transfusions do not produce any permanent improvement in the blood picture. The author has felt at times that the iron metabolism has been interfered with in these cases. His best results have been obtained by having the patients eat fruits, especially stewed apricots, which are high in iron and copper. High calcium therapy is indicated except when elimination is attempted. If the patient is kept on from 20 to 30 drops of viosterol three times a day, there is an elimination over a long period of time. The difficulty lies in the fact that one is dealing with an already damaged bone condition and that any intensive treatment will further decalcify the bones which lack the ability for regeneration.

Occupational Therapy and Rehabilitation, Baltimore

11: 71-154 (April) 1932

Educational and Vocational Program for Patients in Convalescent Hospitals and Sanatoriums. J. H. Holbrook, Hamilton, Ont., Canada.—p. 71.
Healing Influence of Work and Play in Mental Hospital. G. H. Stevenson, Whitby, Ont., Canada.—p. 85.
Recreation for Mental Health Patients: Experiment Conducted in Outpatient Department of a General Hospital. Marguerite Emery, New York.—p. 91.
Introduction to Graphic Presentation of Occupational Therapy Activities in Queens and Other Hospitals in Honolulu. Louise S. Marshall.—p. 101.
Need of Occupational Therapy for Cardiac Patients. P. D. White, Boston.—p. 105.
Need of Occupational Therapy in General Hospital. W. F. Wood, Collingswood, N. J.—p. 109.
Developing Group Solidarity in Occupational Therapy Shop. Olive Caldwell, Worcester, Mass.—p. 117.
Occupational Therapy for Crippled Children. Lillian L. Spencer, Chicago.—p. 123.
Some Social Aspects of Mental Reeducation. J. E. Davis, Perry Point, Md.—p. 129.
Mexican Trades and Crafts: III. M. M. C. B. Knox.—p. 135.

Public Health Reports, Washington, D. C.

47: 837-882 (April 8) 1932

Relative Incidence of Typhoid Fever in Urban and Rural Areas of Tennessee. D. F. Milam and E. Sibley.—p. 839.

47: 883-929 (April 15) 1932

*Trachoma and Trachoma Prevention Work in Missouri. C. E. Rice and J. E. Smith.—p. 885.

Trachoma Prevention Work in Missouri.—Rice and Smith report that the incidence of trachoma in Missouri seems much higher in the southern part of the state than in the north. One area in southern Missouri of 2,506 square miles shows a trachoma incidence rate of almost 20 per thousand. The probable percentage of trachoma blind in Missouri under the present legislative definition of blindness is 3.9 per cent of the total number of trachoma cases. Of 3,893 trachoma cases seen, 65 per cent were in males. Of 1,154 complete records studied, 88 per cent showed the presence of pannus involvement of the cornea. There was corneal damage sufficient to bring vision down to 20/200 or worse in both eyes in 12.5 per cent of all cases seen. Of 1,148 individuals hospitalized at Rolla, 7.1 per cent have been hospitalized three or more times. The authors estimate that there are 17,000 active and inactive cases of trachoma in Missouri at the present time.

Tennessee State Medical Assn. Journal, Nashville

25: 127-164 (April) 1932

Consideration of Carcinoma of Large Bowel. F. W. Rankin and J. T. Priestley, Rochester, Minn.—p. 127.
Art of Healing and Science of Medicine. C. P. Fox, Sr., Greeneville.—p. 134.
Inversion of Uterus. G. W. Smither and V. D. Holloway, Knoxville.—p. 140.
Endometrial Biopsy by Suction. J. C. Burch and H. H. Klinger, Nashville.—p. 142.
Affections of Common Bile Duct, with Especial Reference to Surgical Management. R. B. White, Jackson.—p. 143.
Pellagra. S. J. Fentress, Goodlettsville.—p. 149.

FOREIGN

An asterisk (*) before a title indicates that the article is abstracted below. Single case reports and trials of new drugs are usually omitted.

Brain, London

55: 1-143 (March) 1932

*Myopathic Family, with Hypertrophic, Pseudohypertrophic, Atrophic and Terminal (Distal in Upper Extremities) Stages. S. Barnes.—p. 1.
*Familial Periodic Paralysis: Description of Six Cases Occurring in Three Generations of One Family. T. Kay Maclachlan.—p. 47.
Atrophy and Degeneration in Muscle Spindle. Sarah S. Tower.—p. 77.
Inorganic Constituents of Cerebrospinal Fluid: III. Magnesium and Calcium in Meningitis. R. A. McCance and Elsie Watchorn.—p. 91.
*Tonic Pupils and Absent Tendon Reflexes: Benign Disorder Sui Generis, Its Complete and Incomplete Forms. W. J. Adie.—p. 98.
Part Played by Sympathetic System as an Afferent Mechanism in Region of Trigeminus. H. Helson, Foreword by C. H. Frazier.—p. 114.
Suprasellar Cholesteatomas. H. Olivecrona.—p. 122.

Myopathic Family.—Barnes describes a variant of myopathy, occurring in many members of a single family, which passed through four phases—hypertrophic, pseudohypertrophic, atrophic and terminal—the last stage being associated with a distal atrophy of the upper extremities. Other clinical characteristics were early loss of tendon reflexes, late onset and slow progress, an almost constant association with adiposis universalis, and a relative absence of abortive forms and of polymorphism. The author states that a large and increasing body of evidence is available, which goes to prove that myopathy (muscular dystrophy) is determined at the birth of the ovum and is derived as a factor or as factors inherited from one or both of the two gametes which form the zygote. In rare cases, a new mutation (variation in a normal gene) may arise and be the cause of the condition in the individual developed from that zygote and be transmitted to his descendants. As to whether the effects of the mutant are manifested directly during the development of the individual, or indirectly through the endocrine glands, has not been established. The frequent association of myopathy with adiposity and other evidence of endocrine imbalance may be interpreted on strictly genetic lines, the hormone disturbance being a secondary effect of the mutant. In those cases in which microbic disease, trauma, overwork, and so on, are antecedent in the history, they are merely factors which determine the onset or accelerate the progress of the disease in an individual who is a potential myopathic, i. e., a genotype carrying the mutant gene or genes. Apart from the presence of such underlying factors, it is probable that the muscular dystrophy can never arise.

Familial Periodic Paralysis.—Maclachlan reports six cases of familial periodic paralysis in three generations of one family and reviews the histories of families previously recorded as suffering from this disease. The condition tended to develop about the age of 17 to 18 years in each member of the family, and in some patients who have suffered from paralytic attacks for years there was a development of permanent muscular weakness and rarely the picture of one of the muscular dystrophies; the occurrence of muscular dystrophies in other members of the families, who were not themselves affected by periodic paralysis, is also described. The condition is compared with migraine, epilepsy and certain heredofamilial degenerative diseases. It is considered that two factors are concerned in causing the attacks of paralysis, namely, (1) an abnormal constitution of diathesis in which there exists, in patients with a neuropathic inheritance, a condition of disequilibrium of the vegetative nervous system with evidence of periodic intoxication associated with abeyance of the digestive function and abnormal metabolism at the time of the attacks, and (2) some abnormality in the muscles themselves. The author believes that the attacks of paralysis are caused by the low resistance of the defective muscle to abnormal metabolic products present during the periods of intoxication, while it is probable that interference with the blood and lymph circulation in the muscles, which results from the disturbance of the sympathetic system, is a contributory factor.

Tonic Pupils and Absent Tendon Reflexes.—Adie states that the tonic pupillary reaction, under a number of different names, has been known to ophthalmologists since 1902. In some of their cases absence of one or more of the tendon reflexes was noted, but this was misconstrued as further evidence that the ocular signs were due to syphilis. The author's

conclusions are based on a study of nineteen cases presenting tonic pupils, thirteen of them with absent tendon reflexes, that have been reported, almost all, in journals of ophthalmology. The cases showing tonic pupils and absent reflexes are tabulated. The disorder manifests itself in complete and incomplete forms. The complete form is characterized by the presence of the tonic convergence reaction in pupils only apparently inactive to light and absence of one or more of the tendon reflexes. The term incomplete forms is used for cases presenting (1) tonic pupillary reactions alone; (2) atypical phases of the tonic pupil alone (usually mistaken for iridoplegia or internal ophthalmoplegia); (3) atypical pupils with absent tendon reflexes, and (4) absent tendon reflexes alone. The tonic pupillary reactions are described in detail and discussed in relation to the Argyll Robertson phenomenon, fixed pupils and internal ophthalmoplegia. The conclusion is reached that the tonic pupil is essentially different from them. The features that distinguish it from the Argyll Robertson pupil are emphasized. The incidence and distribution of tendon areflexia are given and the general features of the disorder are described. The age of onset cannot be determined; females preponderate largely; the cause is unknown. The disorder runs a benign course and rarely causes trouble. Occasionally, vision is affected by defective accommodation. Evidence is adduced to show that the disorder is unrelated to syphilis. Under differential diagnosis, syphilis, the ocular manifestations of diphtheria and epidemic encephalitis are mentioned only to show that they never produce the symptoms found in this disorder. Other conditions are referred to in which the tendon reflexes are lost temporarily or permanently in the absence of disease of the spinal cord or peripheral nerves. The conclusion is reached that the symptoms described are the manifestation of a disorder of the sympathetic nervous system. They are the expression of a kind of perversion of nervous activity of which at present one can form no conception.

British Journal of Dermatology and Syphilis, London

44: 173-232 (April) 1932

A Dermatosis Occurring Among East African Natives. A. M. Fleming and R. S. F. Hennessey.—p. 173.
*Significance of Erythema Nodosum. J. O. Symes.—p. 181.
Erythrodermia with Edema. F. P. Weber and E. Schwarz.—p. 187.
*Lymphopathia Venereum (Lymphogranulomatosis Inguinalis) and the Frei Test. J. Wolf and M. B. Sulzberger.—p. 192.
Simultaneous Alopecia Areata in Two Brothers. H. Goodman and H. S. Abel.—p. 198.

Significance of Erythema Nodosum.—Symes feels certain that persons who have been suffering from erythema nodosum are peculiarly liable to develop an acute and often fatal form of tuberculosis within six months of the illness, the most common forms being pleural effusion and acute general tuberculosis. In a series of cases of erythema nodosum which he reported three years ago, tuberculosis appeared within six months in 10 per cent: general tuberculosis developed in two, mononuclear pleural effusion in five, and tuberculous meningitis in one. A tuberculous pleural effusion developed in one other patient in this series, but this was five years after the attack. Since the reports of these cases were published, the author has seen thirteen cases of erythema nodosum; two of the patients, subsequent to the attack, have been found to be suffering from phthisis and have gone to sanatoriums for treatment. An attack of the acute specific fever, erythema nodosum as distinct from the allergic rashes of erythema multiforme or sepsis, calls for a prolonged period of treatment and after-care in order that the tragedy of a fatal attack of tuberculosis may not supervene. The author believes that the practitioner who neglects this precaution is as blameworthy as the man who is content in a case of syphilis to stop treatment as soon as the secondary rash has disappeared.

Lymphopathia Venereum.—According to Wolf and Sulzberger, lymphopathia venereum is not generally accepted as of venereal origin. Without careful examination, the primary lesion is often so insignificant that it passes unobserved. The penile lesion makes its appearance from ten to thirty days after infection and is followed by swelling of the inguinal lymphatics within a period ranging from two to three weeks. The onset is an insidious one, since the lymph nodes are indolent and, as a rule, cause little discomfort. With enlargement there is the tendency for these nodes to become conglomerate, and the overlying skin becomes markedly adherent, attenuated and of violaceous hue. As the disease progresses the lymph nodes soften; they begin to fluctuate, and eventually multiple fistulas appear which discharge a purulent yellowish fluid. Only about 50 per cent of the cases go on to this stage of fistulization. Not infrequently the iliac lymph nodes are involved and are then distinctly palpable, yet not tender. These nodes usually go on to resolution, and many of the inguinal ones likewise subside without treatment. In addition to the signs mentioned, which occur most frequently in males, esthiomène, or ulcus chronicum elephantiasticum vulvae, the condition known as "syphiloma" anorectale and a certain type of high rectal stricture, especially in women, have in many cases been proved to be part of this disease and are probably due to the same (unknown) etiologic factor. Any one of these manifestations, or a syndrome of two or more of them, can be present. Moreover, some cases of elephantiasis of the penis and scrotum are probably due to the same cause. In 1925, Frei introduced a specific intracutaneous test for lymphogranulomatosis inguinalis which has proved to be of distinct value in the diagnosis of conditions involving the inguinal lymph nodes and has been of great help in the classification of this group of diseases. Climatic bubo, strumous bubo, tropical bubo and nonvenereal bubo are all names that have been applied to conditions with this clinical picture, and many of these cases, with the aid of the Frei test, have been proved to be lymphogranulomatosis inguinalis. It is probable that, as the use of this test becomes more widespread, many of the foregoing names will gradually be eliminated from the nomenclature. The authors suggest the name "lymphopathia venereum." Besides the clinical condition described by Nicolas, Favre and Durand, this designation will then include those cases of esthiomène (ulcus vulvae chronicum elephantiasticum), of "syphiloma" anorectale, of elephantiasis of the penis and of rectal stricture, which, by means of the Frei test, have been proved to have the same etiology. All these conditions are due to disease and obstruction of the lymphatics following venereal infection and are probably due to the same etiologic factor or virus.

British Journal of Physical Medicine, London

7: 1-20 (April) 1932

*Nature and Treatment of Adiposalgia. H. Jansen.—p. 3.
Treatment of Constipation by Colonic Irrigation Plus Diathermy. Violet M. H. Rendall.—p. 5.
*Treatment of Nasal Infections by the Super-Kromayer Lamp. E. J. Deck.—p. 6.
Treatment of Obesity by Physical Methods. F. H. Humphris.—p. 7.
*Treatment of Traumatic Lumbago by Manipulation. F. Romer.—p. 10.
Spas and Spa Treatment in Europe. M. B. Ray.—p. 11.
Ultrasonic Sound and Piezo Quartz. B. D. H. Watters.—p. 14.

Nature and Treatment of Adiposalgia.—According to Jansen, "subcutaneous fatty infiltrations" is a term applied to cases in which, in certain parts of the body, there is a somewhat large amount of fatty tissue, very tender to touch and accompanied presumably with abnormal changes. The sites of choice are the legs, the medial surface of the knees, the hips, the abdomen around the umbilicus and along the curvatures, the shoulders (deltoid region), and the back of the neck. Here the tissue is more firm than normal and is unyielding to pressure of the fingers—not infrequently being described as "hard as a board." If one tries to lift up a fold of this tissue, either it will be impossible or—if it can be done at all—the fold is remarkably thick in comparison with the subcutaneous fatty tissue in other areas. On continued palpation, preferably in the form of massage with the skin well greased, one finds also changes in the structure of the tissue. These may be palpable as a large number of small, hard nodules varying in size from a grain of sand to a buckshot, packed more or less closely together. In some places the diffuse infiltration is the dominant form, in others the granular. The skin over the infiltrated areas may be tense and shiny, though as a rule it looks normal, but on rubbing or scratching it shows remarkably strong vasomotor reactions, redness and blebs. Fairly vigorous manipulation of the infiltrated tissue readily produces ecchymoses. The most important feature is the extreme tenderness to touch of the "infiltrated" area. Among the subjective phenomena are a

certain unrest in the affected region, sometimes paresthesia, as formication, and frequently a sensation of cold or mere chilliness. When the fatty layer is very abundant, the skin is usually cool to touch.

Treatment of Nasal Infections.—Deck states that in the treatment of nasal infections by the super-Kromayer lamp the patient should be placed in a dental or similar adjustable chair. The head-rest should be one that can be tilted in any desired position. In the absence of such a chair, the patient may be placed in a semirecumbent position on a couch. The nose, if hypersensitive, must be sprayed with a 10 to 15 per cent solution of cocaine. A flat quartz applicator about 2 inches long, and rounded at the end, is next gently inserted into the nostril and pushed slowly up the nose as far as the patient can bear it, while the lamp is kept as nearly horizontal as possible. With a standard lamp, an application of from forty to sixty seconds is then given to each side of the nose. When this is done, the short quartz applicator should be replaced by one about 4 inches long, with flat sides and slightly curved at the end, so that it can be readily passed along the lower nasal passages. By gentle handling and accommodation to the curves of the lower nasal passages, this applicator can be easily passed almost into the nasopharynx. When this is accomplished, a similar exposure of from forty to sixty seconds may be given to each side. Treatment as a general rule should not be repeated for at least four days.

Treatment of Traumatic Lumbago by Manipulation.—Romer calls attention to the fact that the history in cases of traumatic lumbago tells of some definite though frequently slight sprain of the back, requiring perhaps only a few days' treatment for apparent recovery. Instead of perfect recovery, the pain, though rarely severe, never quite disappears, and as time goes on it becomes more persistent. Good results can be obtained by treatment based on the assumption that the condition is due to some adhesions in the muscular or tendinous structure of those parts. On examination the lumbar muscles will often be found wasted, while those on the affected side are usually rigid and contracted, and it may be assumed that it is here that some matting of muscles or adhesions among the deeper tendons exist. Normal mobility is frequently much impaired. Bending the trunk forward will often show that flexion in the region is deficient and not infrequently accompanied by pain. As a rule these cases are unilateral, and consequently lateral movements of the trunk are often impaired. In this condition, treatment aims at stretching the contracted muscles and rupturing any possible adhesions. An anesthetic having been given, the method employed is this: With the patient flat on the back, the leg on the sound side is flexed at the knee and the thigh flexed on the body till the knee touches the chest wall. It is then brought back to the extended position. The leg on the affected side is now put through the same movements, and comparison can be made as to the difference in resistance, which sometimes is most noticeable. Both legs are now brought up together, and both knees should be kept pressed against the chest for about a minute. The legs having been brought to the extended position once more, the patient is now raised to a sitting posture. The operator places one hand firmly on the affected side, while with the other he thrusts the patient back on to the couch; the hand in the middle of the back, acting as a fulcrum, causes extension; the trunk is then moved laterally on the pelvis. By these movements, full extension and flexion of the lumbar region is obtained. Pain rarely follows these manipulations, and greater freedom of movement is often experienced immediately afterward; but too much importance cannot be attached to the after-treatment. This consists in radiant heat and skilled massage performed daily for a period of about twenty minutes, commencing with light kneading, which can increase in depth as time goes on. Anything like roughness or deep pummeling is to be deprecated. Within the course of about four days, graduated exercises by means of weights and pulleys should be undertaken in addition to the massage.

British Journal of Tuberculosis, London

26: 57-106 (April) 1932

Koch's Discovery of Tubercle Bacillus. S. L. Cummins.—p. 72.
The Teaching of Tuberculosis. J. Crocket.—p. 76.

British Medical Journal, London

1: 643-692 (April 9) 1932

*Surgical Treatment of Diseases of Gallbladder and Bile Ducts. R. P. Rowlands.—p. 643.
*Duodenal Ulcer: Observations on Two Hundred and Fifty Cases, with Especial Reference to Types of Stomach and Corresponding Test Meal Observations. H. S. Morley.—p. 647.
Excretion Urography. R. T. Payne.—p. 649.
Fatal Case of Acute Necrosis of Liver Associated with Epidemic Catarrhal Jaundice. G. M. Findlay and J. L. Dunlop.—p. 652.
Silico-Antracosis Presenting Curious Bodies Similar to Those in Asbestosis. W. E. Cooke.—p. 656.
*Paroxysmal Tachycardia Associated with Pregnancy. D. F. Anderson. —p. 657.

Surgical Treatment of Diseases of Gallbladder.—Rowlands believes that as a good general rule it is wise not to operate during an acute attack of colic, jaundice or fever. It is safer to wait for a quiet interval, using the time to investigate and to prepare the patient carefully. Later, a more radical operation can be safely performed. Fortunately the acute symptoms usually subside under complete rest and careful medical treatment, for, unlike the appendix, the gallbladder and bile ducts rarely set up spreading peritonitis. It is true that occasionally the acute symptoms do not abate but get worse and demand emergency operations. Usually these should be limited to drainage of the gallbladder or common bile duct. Radical operations can, if necessary, be carried out later, when the patient is better, the liver functions are restored, and sepsis has subsided. It is a great mistake to let many recurrences take place or to allow time for dangerous complications to develop or the general health to become seriously depreciated. Too long watching and waiting and relying on drugs and dieting for the relief of symptoms inevitably leads to much suffering and a greatly increased mortality from delayed operation. Some of the consequences of delay are: (1) gangrene, suppuration and perforation of the gallbladder with local or even diffuse peritonitis, pylephlebitis, septicemia and multiple arthritis; (2) extension of the disease to the common bile duct with jaundice, infective or suppurative cholangeitis, with risks of hemorrhage and cholemia; (3) extension to the pancreas, causing either acute hemorrhage or chronic pancreatitis, with or without jaundice; (4) intestinal obstruction by gallstones ulcerating through into the duodenum or colon; (5) adenoma, papilloma and cancer from chronic irritation of the gallbladder and bile ducts; (6) cardiac degeneration from chronic septic absorption (the damaged heart is often restored by removal of a septic gallbladder), and (7) cerebral toxemia, from the same causes, which may induce mental confusion, depression and even insanity, which are sometimes overcome by removing the septic source of poisoning. Cholecystostomy affords complete and permanent relief of symptoms in only about 45 per cent of cases. The persistence or recurrence of symptoms is often due to stones left behind, to the persistence of inflammation in the walls of the gallbladder, or to the formation of new stones. Secondary cholecystectomy or choledochostomy is often required. Cholecystectomy affords complete and permanent relief in about 86 per cent of cases. The more accurate the diagnosis and the more complete the operation, the better the result. Some temporary recurrence of symptoms may follow cholecystectomy, owing, perhaps, to spasm of the sphincter of Oddi, with dilatation of, and inflammatory changes in, the bile ducts secondary to loss of the gallbladder. Under these conditions, spasmodic pains may develop and be attributed to stones left behind in the common bile duct. In the author's experience these symptoms are almost limited to late cases in which delay before removal of the gallbladder has already allowed infection to spread to the common bile duct. Cholangeitis may then persist or recur, perhaps with exacerbations, even after drainage of the common bile duct, as well as after the removal of the gallbladder. Medical treatment will generally cure these symptoms and should be well tried before one submits the patient to another operation, which may not discover any stone or obstruction in the bile ducts. Recurrence of symptoms after operation may be due to residual infection in the liver or pancreas, to stones overlooked in the ducts, to errors in diagnosis—such as overlooking osteartritis of the spine—or to spastic or mucous colitis.

Duodenal Ulcer.—On the basis of an investigation of the records of 250 cases of probable duodenal ulceration, Morley draws the following deductions: 1. The sex incidence shows

a preponderance of 5.2 males to 1 female. 2. One third of all patients first notice symptoms between the ages of 20 and 29; more than one half between 20 and 39 years of age. 3. The asthenic type of stomach is infrequently the seat of duodenal ulceration; but otherwise duodenal ulcers occur in the hyposthenic, sthenic and hypersthenic types in about the same proportions as these types occur in a hundred normal individuals. 4. The average test meal curve is higher in cases of duodenal ulceration than in normal individuals. 5. The curve of gastric acidity steadily increases from being lowest in the asthenic to a maximum in the hypersthenic type.

Paroxysmal Tachycardia in Pregnancy.—The noteworthy feature of a case of paroxysmal tachycardia observed by Anderson in a woman, aged 22, is that throughout the entire period of gestation not a single attack occurred. Apart from some sickness after meals, especially at night, she was perfectly well during pregnancy. The last menstrual period and the first after delivery were each associated with a paroxysm. An attack that appeared one week post partum, lasted over five and a half days, and the worst from which the patient had suffered, far surpassed in duration her previous record, which was thirty-six hours. One cannot fail to be impressed with the absence of tachycardia during the period of pregnancy, when many organs are overtaxed. One naturally wonders to what extent endocrine activity (known to be so pronounced in pregnancy) was concerned.

Glasgow Medical Journal

36: 169-224 (April) 1932

Treatment of Pulmonary Tuberculosis by Collapse Therapy. J. M. Johnston.—p. 169.
Surgical Treatment of Pulmonary Tuberculosis. W. Anderson.—p. 195.

Journal of State Medicine, London

40: 187-258 (April) 1932

Recent Researches in Prevention of Maternal, Fetal and Neonatal Mortality: Lecture III. (*a*) Neonatal Period; (*b*) Puerperium and Puerperal Sepsis. Louise McIlroy.—p. 188.
Etiology of Rheumatism, with Especial Reference to Infective Causes. W. Willcox.—p. 197.
Rise of Conception of Rheumatism as Social Problem. R. F. Fox.—p. 209.
Prussic Acid Fumigation. H. Rosenhaupt.—p. 226.
Compulsory Medical Examination of Factory Workers. H. L. Garson.—p. 231.
Constitutional Researches in Children and Conclusions About Goiter Prophylaxis. F. Boenheim and F. Heimann.—p. 236.

Lancet, London

1: 761-814 (April 9) 1932

*Rôle of Hemolytic Streptococci in Infective Disease. C. C. Okell.—p. 761.
*Gallbladder and Cardiac Pain. C. H. Miller.—p. 767.
Intravascular Occlusion of Mesenteric Vessels. F. d'Abreu.—p. 772.
Amblyopia: Effects of Kinetic Treatment. N. A. Stutterheim.—p. 774.
Tumors of Skin Produced by Blast-Furnace Tar. Georgiana M. Bonser.—p. 775.

Hemolytic Streptococci in Infective Disease.—Okell believes that a large number of hemolytic streptococci from the most diverse sources in human disease and also from apparently normal persons are essentially similar, having the same general morphologic and biochemical properties. Agglutination tests, while they show that serologic differences exist among members of the group, do not differentiate species within the group. There are three properties characterictic of the pathogenicity of the hemolytic streptococci and these must be considered separately. 1. An erythrogenic (or rash producing) toxin, immunologically identical whatever the source from which the strain is derived. To this a neutralizing serum is available, under the name of "scarlatinal antitoxin." 2. A pyogenic property, common to all hemolytic streptococci and perhaps closely related to streptococcal hemolysin. To this no antibody has so far been discovered. 3. An invasive property which may or may not be linked with the pyogenic property. To this also there is no general antibody available, though Lancefield's and Todd's work suggests that antibodies to any particular strain could be prepared. These three elements in the attack of the hemolytic streptococcus, pyogenicity, toxigenicity and invasiveness, vary in intensity from case to case. The strength of the host's defense against erythrotoxin and the side of the conflict also vary. These differences are sufficient to account for the variegated pathologic and clinical patterns of human streptococcal disease. If these views are accepted it must be admitted that the hemolytic streptococci ordinarily encountered in disease constitute a species both on grounds of formal taxonomy and of pathology. With regard to the nomenclature of the species, Rosenbach's term Streptococcus pyogenes has the unquestionable right of priority; hence it should replace Schottmüller's term Streptococcus hemolyticus, which at present seems to have the greater vogue. It would be quite unjustifiable to predict that other species of hemolytic streptococci will not be established in the course of time. For example, the position of the so-called Streptococcus epidemicus and certain hemolytic streptococci found in animals have not yet been clearly defined. The anaerobic hemolytic streptococci have also to be given their proper position. But in the light of present knowledge there is little doubt that it would save much confusion if bacteriologists would abstain from putting forward new species without good reason, and from what is almost worse—giving pseudospecific names to what they would never themselves claim were species in any strict biologic sense.

Gallbladder and Cardiac Pain.—Miller calls attention to the fact that clinically there may be considerable resemblance between the severe pain of the gallbladder and cardiac pain, and there may be overlapping of symptoms in severe attacks affecting either organ. Both types of pain can occur in the same subject and be recognizable as distinct. Disorders of both organs may be present in the same patient. Cases have been quoted in which surgical treatment of the gallbladder has been followed by relief from both types of pain. If there is any reason to suspect the gallbladder in any patient who has cardiac pain, a full investigation of the gallbladder should be made, and if sufficient evidence is found, operation should be advised. A study of morbid anatomy reveals the fact that in subjects with diseased gallbladder the degree of arterial degeneration was higher and the cases of severe arterial degeneration were more numerous than in those whose gallbladders were healthy. That being so, it would appear to be rational to deal thoroughly with cases of cholecystitis or gallstones as soon as diagnosed.

Medical Journal of Australia, Sydney

1: 391-424 (March 19) 1932

Remarks on Some Abdominal Problems, Based on Clinical Experience. H. I. Holmes.—p. 391.
Public Health Responsibilities of General Practitioner. G. E. Cole.—p. 395.
Some Aspects of Obstetric Radiography. C. MacDonald.—p. 398.
Use of Some Recently Introduced Drugs in Treatment of Diseases of Heart. M. C. Lidwill.—p. 406.

Practitioner, London

128: 369-464 (April) 1932

British Health Resorts and Spas. H. Rolleston.—p. 369.
British Spas: Indications and Seasons. R. F. Fox.—p. 373.
Choice of Spa. M. B. Ray.—p. 382.
East Coast Health Resorts. F. W. Burton-Fanning.—p. 394.
Climate and Health Resorts of Southwest of England. A. E. Carver.—p. 403.
Health Resorts on South and Southeast Coast. L. Wainwright.—p. 416.
Thrombophlebitis Migrans vel Recurrens. F. P. Weber and E. Schwarz.—p. 421.
Practical Points on Modern Infant Feeding. B. Myers.—p. 425.
*Cardiac Arrythmias: Their Effect on Operative Risk. T. J. Hoskin.—p. 437.
Diagnosis of Mastoid Disease in General Practice. H. V. O'Shea.—p. 447.

Cardiac Arrhythmias.—Hoskin states that cardiac arrhythmia is not uncommonly found in cardiovascular syphilis; it may show itself in the form of ectopic beats, as auricular fibrillation, or as an impairment of the conductivity of the neuromuscular system. Thus, all forms of auriculoventricular block may be found as the result of syphilis. The author emphasizes the necessity of obtaining a full history and of having Wassermann and Kahn tests done in all cases in which the integrity of the cardiovascular system is open to doubt. Syphilis, unlike rheumatic fever, affects not only the heart muscle but also the proximal part of the aorta, with involvement of the orifices of the coronary arteries, resulting in a condition of anoxemia of the heart muscle. Patients with cardiovascular syphilis stand operations badly, and therefore a positive Wassermann reaction or signs of cardiovascular syphilis makes the operative risk

much greater, and it is thus of the utmost importance that the surgeon and anesthetist should be cognizant of it prior to the operation.

South African Medical Assn. Journal, Cape Town

6: 177-212 (March 26) 1932

Symposium on Hysterical Phenomena: Psychiatric Aspect. W. Russell. —p. 179.
Id.: Medical Aspect of Hysteria. J. Drummond.—p. 181.
Id.: Hysterical Phenomena in Women. D. J. Malan.—p. 185.
Id.: Surgical Aspects of Hysteria. T. L. Sandes.—p. 187.
Impressions and Suggestions. G. E. Nesbitt.—p. 190.

Chinese Medical Journal, Shanghai

46: 243-346 (March) 1932

*Brucella Infection in Chinese (Undulant Fever). S. H. Zia and D. H. Wong.—p. 243.
*Study of Gastric Secretion in Various Forms of Vitamin A Deficiency. A. Pillat and H. C. Chang.—p. 254.
Trigeminal Neuralgia: I. Diagnosis and Treatment. S. T. Kwan.—p. 260.
Vital Statistics of Families of Chinese Physicians. W. G. Lennox.—p. 277.
*Renal Tuberculosis: Statistical Study of Fifty-Six New Cases. H. E. Shih and G. Y. Char.—p. 285.
Preliminary Study of Postpubertal Phthisis in Chengtu. H. G. Anderson. —p. 305.
Hysterical Chorea and Catalepsy Following Trauma. S. D. Sturton. —p. 313.
Report of Case of Complete Transposition of Thoracic and Abdominal Viscera. T. D. Fay.—p. 318.
Root Amputation Versus Tooth Extraction. A. W. Lindsay.—p. 320.
Occlusion. H. J. Mullett.—p. 325.

Brucella Infection in Chinese.—Zia and Wong report two cases of undulant fever of natural infection and one of probable laboratory infection. They were all proved by positive agglutination and blood culture. An attempt to differentiate the organisms obtained into the subgroups of Brucella was made and the common differential tests are briefly described. Incidence, symptomatology, diagnosis and treatment of this disease are briefly discussed. Attention is called to the present lack of definite knowledge in the spread of this disease in North China, where dairy products probably do not play an important part.

Gastric Secretion in Vitamin A Deficiency.—Pillat and Chang studied the gastric function by the histamine method in twenty-five cases of vitamin A deficiency. A definite depression of the acidity was found in ten cases. Four patients had anacidity. The degree of impairment of the gastric function seemed to be related to the duration and severity of the eye disease. After the administration of cod liver oil and improvement of the eye lesion, in seven out of the eight cases reexamined the patients showed an improvement in the gastric secretory function.

Renal Tuberculosis.—The results of a survey of fifty-six new proved cases of renal tuberculosis seen during the past ten years are summarized by Shih and Char as follows: Renal tuberculosis was seen in the male almost three times as often as in the female. It occurred most frequently in the second, third and fourth decades of life. It affected people of all professions, most commonly students, merchants, housewives and soldiers. The two kidneys were affected with equal frequency. Evidence of tuberculosis in other parts of the body was found in 35 per cent of the cases. The general health of the patients was good in 50 per cent of the cases. Sixty per cent of the cases were seen within the first year of symptoms. The symptoms in the order of their frequency were hematuria, frequency of urination, painful urination, pyuria, and renal and vesical pain. The urine was acid in 75 per cent of all the cases and contained albumin in 88 per cent. Tubercle bacilli were demonstrated microscopically in 27 per cent, in catheterized specimens from separate ureters in 36 per cent and by guinea-pig inoculation only in 9 per cent — a total of 72 per cent. The advantages of cystoscopy, ureteral catheterization, roentgen examination and pyelo-ureterography are discussed. The authors believe that renal tuberculosis is never cured by general medical and hygienic measures alone. Nephrectomy, wherever possible, is the treatment of choice. Fifty-five per cent of the cases were operable. There was no immediate operative mortality in this series. Fifty-five per cent of the patients in whom nephrectomy was performed are greatly improved or well.

Presse Médicale, Paris

40: 625-640 (April 23) 1932

Lipin Precipitation of Specific Cations and Determination of Protective and Zymosthenic Power of Mineral Waters. M. Loeper, A. Mougeot and V. Aubertot.—p. 625.
*Resection of Cellular Tissue in Treatment of Paronychias. J. de Rougemont and F. Carcassonne.—p. 627.
Gastric Secretion in Urticaria. C. Rahier.—p. 629.

Resection of Cellular Tissue in Treatment of Paronychias.—Rougemont and Carcassonne state that, in a large number of cases of infection of the fingers, simple incision is not enough to assure cure, because there is not an actual collection of pus but a necrosis of cellular tissue, elimination of which is slow. A large resection extended into the healthy tissue in rapidly removing the contaminated zone has incomparable advantages over incision: it hastens cicatrization in all cases, it avoids the silent spread of infection, which often persists after the usual treatment; finally, although extensive, it permits preservation of the finger with satisfactory function in cases in which its vitality was endangered. In reviewing the pathogenesis of panaris the author calls attention not only to the extensive tissue necrosis but also to the severe inflammatory reaction which accompanies it and which in the finger, owing to its construction, can lead to great detachment and extensive gangrene of the skin and consequent amputation. By simple incision with a bistoury one may sometimes cure a beginning cellulitis, but more often the lesions are too serious and following incision the cellular tissue ruptures, drainage is impeded or lacking, tumefaction is increased, and there persists for weeks a state of semiinfection, which leaves the affected area much altered. The thin cicatricial tissue that replaces the necrosed skin adheres to the decalcified bone without interposition of cellular tissue. Excision of the entire zone of infection at the start avoids its extension and also reduces the severity and intensity of the inflammatory reaction and its dangers. The authors think a large excision with scissors which, while sparing the nerves, vessels and sheaths, removes the diseased tissue and extends just into the healthy tissue constitutes an efficacious therapeutic measure.

Revue Française de Dermat. et de Vénéreol., Paris

8: 131-192 (March) 1932

*Treatment of Primary Syphilis by Inoculation with Spirochetes of Rat-Bite Fever. Hashimoto and I. Iwakiri.—p. 131.
Photobiotropism. H. Jausion, F. Pagès and A. Soleil.—p. 145.
Tabetic Pruritus and Erythrodermia. G. Milian.—p. 160.

Treatment of Primary Syphilis by Inoculation with Spirochetes of Rat-Bite Fever.—Hashimoto and Iwakiri report the results of treatment in thirteen cases of primary syphilis by inoculation with the spirochetes of rat-bite fever (Spirochaeta morsus-muris). While they admit that their material is insufficient for a definite judgment of this therapy, they conclude that primary syphilis may be completely cured by inoculation of rat-bite fever, without other treatment. The patients were inoculated intramuscularly with spirochetes obtained from the blood of guinea-pigs that had been inoculated with cultures of the organism. The rat-bite fever, which develops after an incubation of from six to sixteen days, may be intermittent or continuous. The rat-bite fever was cured by injection of arsphenamine after the second or third attack of fever. The quantity used was as small as possible (from 0.3 to 0.4 Gm. every three to five days, to a total of from 0.6 to 1.5 Gm.) to avoid influencing the syphilitic treatment. Inoculation of the rat-bite virus resulted in the disappearance of Spirochaeta pallida from the chancre in the first days of fever even in cases in which a great many spirochetes had been observed previously. In one case the spirochetes disappeared from the chancre before the fever attack. Serum reactions (Wassermann, Meinicke and Murata) were practiced before and after inoculation, after each fever attack, and after each injection of arsphenamine. The serum became negative and remained negative in six of the nine cases observed sufficiently long. In two of the others there was a decided decrease in the strength of the reaction. In the control case, in which an injection of arsphenamine was not given, the serum reaction became quite strong from time to time but became completely negative after one year. In discussing the disappearance of Spirochaeta pallida from the chancre, the authors advance the

idea that this may be due to the reproduction of Spirochaeta morsus-muris, which is antagonistic to Spirochaeta pallida, instead of being due to the fever caused by the rat-bite virus.

Semana Médica, Buenos Aires

39: 757-840 (March 10) 1932. Partial Index

Symphysiotomy in Spontaneous Labor for Disproportion Between Pelvic and Cephalic Diameters. A. Peralta Ramos and J. Bazán.—p. 757.
Congenital Perineal Ectopy of Testis. J. M. Jorge and S. I. Nudelman. —p. 761.
Treatment of Tuberculous Asthma with Tuberculin. J. J. Vitón and J. A. Cruciani.—p. 765.
*Generalized Thoracic Pulsation. T. Padilla, P. Cossio and E. B. del Castillo.—p. 769.
Indications for Symphysiotomy for Delivery. R. Schwarcz.—p. 778.
Visceralgia; Lemaire's Sign. R. C. Ferrari.—p. 784.
Influence of Atropine on Sugar Metabolism. A. Casanegra.—p. 803.
Subcutaneous Milk Therapy in Nervous Agitation. R. B. Silva and H. M., Piñero.—p. 809.
Heterotopic Ossification of Tumor of Thyroid. W. Tejerina Fotheringham.—p. 812.

Generalized Thoracic Pulsation. — Padilla and his collaborators consider the diagnostic value of a sign (previously described by Arrillaga and Dabove) as pathognomonic for aneurysm of the retrocardiac portion of the descending aorta (even in cases in which the small size of the aneurysm or its location behind the heart make it difficult to diagnose by roentgen examination). The sign consists in a generalized pulsation of the entire anterior aspect of the thorax, which is synchronous with the ventricular systole and during which the two halves of the thorax present an opposed pulsation; that is, an elevation of the left half of the thoracic anterior wall with a simultaneous depression of the right half. However, the authors found the sign in three cases with some pathologic conditions of the heart (cardiac hypertrophy and tumors behind the heart), while it was absent in a case of aneurysm of the retrocardiac portion of the descending aorta. From their observations in the cases mentioned, the authors conclude that the sign of generalized thoracic pulsation may appear in aneurysm of the retrocardiac portion of the descending aorta, in tumors located behind the heart, and in hypertrophy of the heart. The generalized thoracic pulsation is caused by the systolic dextrotorsion of the heart when this organ is imprisoned between the anterior thoracic wall anteriorly and the vertebral column posteriorly, owing either to its increased volume or to the space being occupied by aneurysm or tumor. The pulsation is caused by a thrust of the heart against the thoracic wall, which causes the elevation of the left half of the thorax with a generalized pulsation. When the precordial systolic elevation is followed by a second diastolic elevation caused by an impulse of the heart by the dilatation of the aneurysm, there is a double pushing of the heart against the thoracic wall (the first projection of the heart being caused by the apex beat while the second represents a renewed impulse given to the heart by the expansion of the aneurysm during the diastole), a sign which Hope described in 1830 under the name of "double jogging impulse."

Siglo Médico, Madrid

89: 405-428 (April 16) 1932. Partial Index

*Injection Treatment of Inguinal Hernia. J. Marín Espinosa.—p. 405.
Gonorrheal Arthritis: Present Status. J. M. Tome Bona.—p. 409.
Surgical Treatment of Tumors of Spinal Cord. L. Dominici.—p. 411.

Injection Treatment of Inguinal Hernia.—Marín Espinosa obtained good results in 500 cases of inguinal hernia in adults from 40 to 80 years of age, with a treatment of about eight to ten injections, at weekly intervals, of from 0.5 to 2 cc. each of a solution made up according to the following formula: 80 Gm. of absolute alcohol, ten drops of solution of orthophosphoric acid, and as much distilled water as required to make 100 cc. In some exceptional cases he injected a larger dose (from 4 to 10 cc.). From his observations the author reaches the following conclusions: The treatment with stimulating injections is efficient when inguinal hernia may be easily reduced and the reduction maintained by a truss, regardless of the size of the hernial sac, its duration, its primary or recurrent development, and the age and general condition of the patient. The treatment is harmless and does not interfere with the working activities of the patient, since it is of an ambulatory type; no complications are observed during its administration and it is followed by complete recovery in 85 per cent of the cases. It is advisable to have children with inguinal hernia use a truss, with the use of which, as a rule, complete cure is obtained at that age. Young persons as well as more mature persons in good health should be operated on. The injection treatment should be reserved for the aged or for mature adult patients with some other coexistent diseases or poor general health. The author warns physicians to whom the technic of the stimulating injections for inguinal hernia is unknown against the use of commercial preparations which they received from abroad or from some other cities with instructions by correspondence to give the injections. The method, which in the hands of surgeons is safe, may be dangerous if given by physicians who are not familiar with its technic.

Klinische Wochenschrift, Berlin

11: 617-664 (April 9) 1932

Postoperation Syndrome. H. Eppinger.—p. 618.
*Early Diagnosis of Cirrhoses of Liver. P. Morawitz and R. Mancke. —p. 623.
Renal Glycosuria. L. Lichtwitz.—p. 626.
*Antianemic Substance in Blood Activated by Ultraviolet Irradiation. R. Seyderhelm.—p. 628.
Measurement of Volume of Pneumothorax. P. Martini and A. Heymer. —p. 631.
Bromine Content of Blood in Manic-Depressive Psychosis. H. Zondek and A. Bier.—p. 633.
Cholesteremia in Cirrhosis of Liver and Hepatocellular Icterus. F. Stroebe.—p. 636.
Relation of Basal Metabolism to Analysis of Total Daily Energy Economy. H. Bernhardt.—p. 639.
Relation of Insulin Sensitivity to Sinus Caroticus. J. Casas and K. Hinsberg.—p. 641.
Influence of Pregnancy, Parturition and Puerperium on Alveolar Carbon Dioxide Tension. P. Goldschmidt-Fürstner.—p. 642.
Total Carbohydrate Content of Cardiac Muscle: Theory and Results of Collapse Therapy in Pulmonary Tuberculosis. H. Ulrici.—p. 643.
Exactness in Execution, Evaluation and Presentation of Medical Investigations. H. von Wasilkowska-Krukowska and W. von Krukowski. —p. 646.

Early Diagnosis of Cirrhoses of Liver.—In a general consideration of the problem of early diagnosis of cirrhoses of the liver based on their own clinical experience, Morawitz and Mancke state that testing of various partial functions of the liver by tolerance tests is a valuable diagnostic measure, often permitting a certain diagnosis when other methods have failed. Spontaneous metabolic disturbances are not to be expected in the initial injuries of the parenchyma; therefore tolerance tests have to be used. The tests chosen by the authors were the combined insulin-dextrose-water tolerance test according to Althausen and the gelatin-water tolerance test of Mancke. In experiments conducted in eleven cases of early cirrhosis the insulin-dextrose-water tolerance test was positive in every case. The mechanism of this test is not yet fully understood. In view of the close functional relation of the liver with other organs it cannot be regarded as specific for the liver, but it seems to reveal incipient cirrhoses with the most certainty and may be used for examination in diseases of the liver. The gelatin tolerance test was positive in only seven of ten cases, but in the experience of the authors it has been positive solely in injuries of the liver. Another of the newer methods which the authors consider valuable in early diagnosis of cirrhosis is roentgenologic examination of the esophagus. They cite several cases in which discovery of varices in the esophagus by roentgenologic examination led to diagnosis of cirrhosis of the liver which was confirmed by further examination. While recommending these new methods of diagnosis the authors warn against neglecting the older measures, such as determination of urobilin in the urine, bilirubin in the blood, laparoscopy (in some cases), exact anamnesis and general clinical examination. The value of early diagnosis of cirrhosis of the liver from the standpoint of prophylaxis, therapy and prognosis is emphasized.

Antianemic Substance in Blood Activated by Ultraviolet Irradiation. — Seyderhelm states that the blood of human beings and other mammals contains an antianemic substance associated with the stroma of the erythrocytes which can be activated by ultraviolet irradiation. This statement is based on a series of experiments on dogs to determine the effect of direct ultraviolet irradiation of the circulating blood on the healthy and the diseased organism. The experiments show that saponin-induced anemia in dogs is prevented by ultraviolet irradiation of the circulating blood. The transfer

of blood that has undergone ultraviolet irradiation—whether this was accomplished in vivo or in vitro—counteracts experimental saponin-induced anemia. The blood values achieved usually exceed the initial preanemia values, in spite of the continued infusion of saponin. This antianemic effect is not based on a detoxication of the infused saponin but is the result of a pouring out of young erythrocytes from the bone marrow into the blood stream in great abundance and to a degree not previously observed. This outpouring of erythrocytes usually leads to an overcompensation. The antianemic substance is associated with the stroma of the erythrocytes and can be derived from it in a protein free water clear solution. The author has named the active substance "cytagenin." A small percentage of this substance exists in active form in the blood of normal animals and human beings, but it exists chiefly in the inactive preliminary form. Ultraviolet irradiation in vitro produces a strong increase in activated cytagenin. Clinical investigations showed that injection of cytagenin is followed by an increase of reticulocytes in the peripheral blood in human beings and other mammals. A larger dose of this substance was required to bring about a reticulocyte response in cases of carcinoma, chronic septic conditions, advanced tuberculosis and pernicious anemia. Among these, regeneration was accomplished most rapidly in hypochromic anemias due to carcinoma and pulmonary tuberculosis and was accompanied by a general subjective improvement, shown in weight increase, reduction of increased sedimentation speed of erythrocytes and drop in temperature. Injection of cytagenin in cases of pernicious anemia brought a reticulocyte response but not the change effected by liver therapy. The author thinks it will require more investigation to determine the exact clinical significance of cytagenin and to determine whether it has an antitoxic as well as antianemic effect.

Münchener medizinische Wochenschrift, Munich

79: 577-620 (April 8) 1932

Bowlegs: Various Types and Treatment. F. Lange.—p. 577.
*Disturbances in Cardiac Rhythm with Severe Peripheral Circulatory Disturbances and Their Treatment. G. Wiele.—p. 581.
*Positive Seroreaction for Syphilis Following Injection of Diphtheria Serum. C. Stern.—p. 583.
Asthma, Bronchitis and Cold in Relation to Seasons. W. Storm van Leeuwen and C. de Lind van Wijngaarden.—p. 583.
Psychodiagnostic and Psychotherapeutic Experiences in Clinic for Internal Diseases. E. Wittkower.—p. 586.
Simple Method for Rapid Determination of Sugar Content of Urine. F. Rosenberg and H. Rauch.—p. 589.
Simple Screening Against Alternating Current in Electrocardiography. H. Zimmermann.—p. 590.
Spleen Soup for Pale Children. H. von Baeyer.—p. 590.
Treatment of Pulmonary Gangrene. M. Lebsche.—p. 593.
Roentgen Diagnosis of Intestinal Occlusion. H. Durst and S. Utzschneider.—p. 597.
Bone Bridge Between Anterior Portion of First and Second Rib Simulating Early Infiltrate. Jüttner.—p. 600.
Oral Cholecystography. B. Thom.—p. 600.
Pathogenesis of Multiple Sclerosis and Suggestion for Treatment. J. Hallervorden.—p. 602.

Disturbances in Cardiac Rhythm with Peripheral Circulatory Disturbances.—Wiele relates the clinical histories of two patients with paroxysmal tachycardia in whom the peripheral circulation was temporarily considerably impaired. The extremities, particularly the legs, were cold and hypesthetic, and gradually a bluish-black discoloration developed. The attacks of tachycardia were counteracted by intramuscular and eventually also by intravenous injection of a quinine preparation, and after the tachycardia had been checked the peripheral circulation likewise became normalized. The attacks recurred, but under the influence of quinine medication they became less frequent. The author advises that in disturbances of the cardiac rhythm the peripheral circulation should be watched, especially during perpetual arrhythmia, which is frequently observed in older people. During this irregularity of the pulse that develops on the basis of an auricular fibrillation, attacks of severe tachycardia often occur, and in these patients there are likewise disturbances in the peripheral circulation. The patients complain of unpleasant sensations in the extremities. The feet are cold and appear livid. If such disorders can be traced to a cardiac impairment they can be therapeutically influenced but, if they are due to vascular impairment, treatment is generally of little effect. Accordingly the author advises that one watch for disturbances in the cardiac rhythm, whenever disorders exist in the peripheral circulation. For the treatment of perpetual arrhythmia, the author recommends digitalis rather than quinine preparations.

Positive Seroreaction for Syphilis Following Injection of Diphtheria Serum.—Stern directs attention to several reports on positive syphilis reactions after injection of diphtheria serum, which have appeared since 1929. On the basis of these reports the possibility of a positive syphilis reaction after serum treatment cannot be doubted, but the author advises precaution in the interpretation of such observations. As early as 1920 he had pointed out that certain cases have to be differentiated from syphilis, which apparently are likewise caused by spirochetes, such as by oral spirochetes or by the spirochetes of balanitis, but not by Spirochaeta pallida. He observed cases with diphtheria-like symptoms, such as fever and painful throat, which had been diagnosed as diphtheria but in which bacteriologic examination proved this diagnosis incorrect. These cases, in which serum treatment had not been resorted to, often gave a positive syphilis reaction, which disappeared again spontaneously. Positive syphilis reactions were also observed following Vincent's angina. The author warns against the overevaluation of serologic tests, because positive syphilis reactions may be observed after throat infections, whether diphtheria serum has been administered or not. As a rule these positive reactions disappear spontaneously; however, he thinks it possible that they may persist for longer periods if infectious foci remain in the tonsils.

Wiener klinische Wochenschrift, Vienna

45: 449-480 (April 8) 1932

Goethe and Darwin as Naturalists. A. Fraenkel.—p. 449.
*Neoplastic Arthroses. K. Weiss.—p. 454.
Pathogenesis and Surgical Treatment of Epilepsy: Influence of Reflexogenic Sinocarotic and Cardio-Aortic Zones. D. Danielopolu and J. Marcu.—p. 457.
*Sugar Test Breakfasts. L. Lövi.—p. 460.
Treatment of Leukorrhea. C. Bucura.—p. 463.
Significance of Renal Insufficiency in Surgery. V. Blum.—p. 468.
Bilateral Pneumothorax. A. B. Frisch.—p. 470.

Neoplastic Arthroses.—The articular changes designated by Weiss as neoplastic arthroses are a special group of articular disorders with a characteristic symptomatology. They have nothing in common with arthritis deformans, with which some forms of neoplastic arthroses are classified. In the primary stage they are not inflammatory and their typical symptom is a new formation of tissues, which originates in some essential position of the joint, especially in the synovial membrane. The basis of their development is an organ-specific predisposition for neoplasms, but the immediate causes are articular injuries or diseases of various types.

Sugar Test Breakfasts.—In examining the gastric secretion following caffeine and alcohol test drinks, Lövi observed that alcohol exerts a considerable stimulation on the gastric mucous membrane and therefore is not suitable for the determination of the secretory function of the stomach. Caffeine, on the other hand, is a more physiologic stimulant. A recent report on the favorable influence of sugar in gastric and duodenal ulcers induced the author to investigate to what extent the orally administered concentrated sugar solution influences the chemical composition of the gastric juice. In order to compare the acid values, he made tests with caffeine and with sugar solution. On the first day the patients were given 200 cc. of water with 0.2 Gm. of caffeine, on the second day 200 cc. of water with 50 Gm. of sugar. These parallel experiments were made on thirty-seven patients, the majority of whom had gastric or duodenal ulcers or other gastric disorders, and some of whom had hepatic or biliary disorders. The acid values observed following the sugar test breakfast were considerably lower than those observed after the caffeine test. The lower values are due to the hyperinsulinemia produced by the sugar, and not to a dilution, nor to a lesser stimulating effect of the sugar. The fluctuations in the blood sugar curves that were observed are due to individual differences in the functional capacity of the islands of Langerhans. Histamine tests revealed that histamine does not increase the gastric acidity after the caffeine test drink, but it does increase the acidity after the sugar test. This is probably due to the fact that the histamine paralyzes the insulin action produced by the sugar and that

thus the acid secretion is no longer inhibited. The author employed sugar treatment successfully in nine cases. Intravenously administered sugar he found ineffective.

Zeitschrift für klinische Medizin, Berlin

120: 1-248 (April 5) 1932

Insensible Perspiration and Specific Dynamic Action of Protein. J. Dieckhoff.—p. 1.
*Clinical and Experimental Investigations on Significance of Iron Contained in Food. F. Reimann and F. Fritsch.—p. 16.
*Disturbances in Conduction System of Heart During Diphtheria. W. Grunke.—p. 40.
Bilirubin Tolerance Test in Liver Disturbances. F. Stroebe.—p. 95.
Importance of Continuous Determination of Size of Liver in Patients Without Disturbances of Liver. E. Kobrak.—p. 112.
Behavior of Uric Acid Elimination in Urine Following Administration of Histidine. Margot Zeyen.—p. 128.
Clinical Aspects of Lipoid Nephrosis. A. Staubli.—p. 141.
Salyrgan Diuresis. M. Nothmann.—p. 158.
Behavior of Urinary Colloids and Its Value in Differential Diagnosis of Renal Diseases. H. Kahler, H. Kreuzig and F. Scheitz.—p. 171.
Quantitative Relation Between Blood in Urine and Erythrocytes in Sediment. Erna Cohn and E. Mislowitzer.—p. 193.
Diagnosis of Renal Infarct. F. Weiss.—p. 199.
Hematologic Observations on Persons in Spitzbergen: Aspects of Polar Anemia. O. Abs.—p. 213.
Blood Catalysis and Volume of Erythrocytes. I. Hallay.—p. 230.
Continuous Action of Sinocarotic Neurectomy on Cardiac Rhythm and on Blood Pressure in Human Beings. D. Danielopolu and A. Aslan.—p. 237.
Influence of Carbon Dioxide Baths on Chemical Dynamics of Muscular Work in Patients with Heart Disease. I. M. Sribner and R. N. Frenkel.—p. 240.

Significance of Iron Contained in Food.—Reimann and Fritsch state that formerly medicinal iron was differentiated from nutritional iron. It was assumed that medicinal iron was necessary for the cure of anemic conditions, whereas the iron in the food maintained a normal hemoglobin content only in healthy persons. However, the authors show that a large intake of foods that are rich in iron can effect an improvement in the blood status of iron-susceptible anemias for a considerable length of time. They observed no essential difference between the action of the iron contained in the food and that of a medicinal iron preparation. The iron contained in the food undergoes great changes during its passage through the gastro-intestinal canal. It is split off, transformed into ferrous iron, dissolved and resorbed. Thus the iron contained in the food exerts its therapeutic action by an indirect route; namely, by way of the effective ferrous iron. The splitting off, transformation and solution of the nutritional iron takes place mainly in the stomach, by the combined action of hydrochloric acid and the ferments, but to a lesser degree it takes place also in the intestine. However, the stomach and the intestine change only a part of the food iron into soluble ferrous iron; the other portion of the iron leaves the gastro-intestinal tract unchanged. For this reason the food iron exerts a lesser influence than the same quantity of ferrous iron. The utilization of the food iron is governed by laws similar to those that govern reduced iron or other iron preparations. The common denominator, by which the iron becomes effective, is the ferrous iron that is formed in the gastro-intestinal tract. The normal food provides only a limited amount of iron, which, although sufficient to maintain a normal hemoglobin content in healthy persons, is not adequate to effect a cure of anemia, especially when, as in gastric achylia, the conditions for resorption are unfavorable.

Disturbances in Conduction System of Heart During Diphtheria.—On the basis of reports in the literature, Grunke discusses disturbances in the cardiac conduction system developing during diphtheria, and the histologic changes in the cardiac muscle, which have been observed during these conduction disturbances. He then reports twenty-three cases of diphtheria, with severe electrocardiographic changes, and the results of histologic examinations on serial sections from the atrioventricular bundle and from other portions of the heart. Of the twenty-three patients, twenty-one died within the first eight days after development of the electrocardiographic changes. The histologic examinations of the conduction system and of the cardiac muscle revealed in the cases with electrocardiographic disturbances changes of a degenerative or of an exudative proliferative nature. In comparison with these cases, those without electrocardiographic disturbances showed only slight histologic changes, so that it is justified to ascribe the development of the pathologic electrocardiogram to those changes. The type of the histologic changes apparently has no influence on the type of the electrocardiographic disturbances, for the same electrocardiograms were noted in degenerative and in infiltrative processes. A relationship between the pathologic form of the electrocardiogram and the localization of the disease process in the cardiac muscle could not be definitely established. On the basis of his observations the author concludes that, in approximately half of the diphtheria cases that had a fatal outcome, death was caused by the cardiac injury. In regard to the treatment, he states that serum is effective only if it is administered during the first twenty-four hours following the development of the diphtheria. He further states that there was no conclusive proof for a favorable influence of the commonly employed cardiac drugs. Epinephrine proved the most effective.

Zeitschrift für Krebsforschung, Berlin

36: 1-144 (April 12) 1932

*Biologic Treatment of Malignant Tumors. G. Fichera.—p. 1.
*Cancer Problem as Hormone Problem. St. Konsuloff and K. Dimitracoff.—p. 37.
Heterotransplantation of Lymphosarcoma of Mice. C. Krebs and M. Thrane.—p. 49.
Cultivation of Lymphosarcoma in Vitro. C. Krebs and B. Faber.—p. 59.
*Pathogenesis of Primary Pulmonary Cancer. P. W. Ssipowsky.—p. 67.
Method to Free Inoculation Tumors from Spirilla. H. Aris.—p. 78.
*Combination of Cancer and Pulmonary Tuberculosis. S. Derischanoff.—p. 82.
Vital Storage and Tumor Development. G. A. Kreuzwendedich von dem Borne and R. E. J. ten Seldam.—p. 93.
Isamine Blue Therapy in Animal Experiment. G. A. Kreuzwendedich von dem Borne and R. E. J. ten Seldam.—p. 97.
Experimental Carcinoma of Gallbladder. I. I. Genkin and J. D. Dmitruk.—p. 104.
Diagnostic Investigations with a Diastase Activating Substance of Urine in Cancer and in Other Diseases. P. Geréb.—p. 115.
Water Content of Tissues of Normal Rats and of Those with Cancer. H. Schlottmann and W. Rubenow.—p. 120.
Experimental Production of Rat Sarcoma by Tomato Juice. W. A. Collier and R. Jaffé.—p. 126.

Biologic Treatment of Malignant Tumors.—Fichera discusses the latest results of his studies on the cancer problem, which he and his students have carried on for the last twenty years. His investigations were based on the theory that tumor formation is due to a disintegration of oncolytic substances or to an excess of substances stimulating cell growth or is the result of both these factors. After mentioning various observations that corroborate this theory of pathogenesis, he reports therapeutic experiments. In the summary he emphasizes that in children and in young persons the oncolytic capacity is much greater than in older persons and in cancer patients. Tests on the organs of calves revealed that the oncolytic capacity is greatest in the thymus and in the spleen and that it is lesser in the liver and least in the muscles and testes. Injection of extracts from the spleen and from the thymus into young persons and into old persons with cancer, with cardiac disorders or with arteriosclerosis revealed that these extracts increase the oncolytic power. The increase thus produced is more rapid and more lasting in young persons than in old persons. Injection of extracts from other organs increased the oncolytic index little or not at all.

Cancer Problem as Hormone Problem.—Konsuloff and Dimitracoff cite evidence that in animals a hormonal mechanism regulates the division and oxidation processes and the respiration of the cells. A disharmony in this hormonal regulation, which in older persons is more likely to occur, is the basis of the cancerization of the cells. Once this disharmony has set in, the tumor formation may begin if there is an inciting factor, that is, a sufficiently strong and persisting irritation. However, without the hormonal disharmony such irritation would not have that effect. The deviation of the cells begins with a modification that at first is reversible; but, if mutation once sets in, reversion to normal cells becomes impossible. Cultivation in vitro will reveal whether mutation has already taken place. As an example of prolonged modification that eventually may lead to mutation into a malignant growth, the authors mention gastric ulcer. They reason that if a hormonal disturbance is the common cause of the various stages of this condition, the same hormone that influences a gastric ulcer should also influence cancer. Accordingly, they tried to influence inoculated mice tumors by means of an insulin-free pancreas hormone that had produced favorable results in gastric ulcer. By intraperi-

toneal injection, the growth of tumors could be considerably inhibited. It is probable that this preparation contains some of the components of the hypothetic hormones that regulate the cell functions. The authors think that further investigations on this problem may open a way for combating cancer.

Pathogenesis of Primary Pulmonary Cancer.—Ssipowsky discusses the development of pulmonary cancer on the basis of two case reports. In the first instance the cancer developed after a chronic abscess. This case is of particular interest because it is the only one of this kind that has been reported. The author thinks that the pulmonary cancer developed under the influence of a chronic inflammation. That a chronic inflammation can really lead to tumor formation is shown in a second case, in which pulmonary cancer concurred with pulmonary tuberculosis. A chronic pleurisy and an indurative process led to proliferation of the epithelial elements of the bronchi in the region of the upper lobe of the right lung, because here a considerable connective tissue formation had created favorable conditions for this. Simultaneously, or perhaps somewhat earlier, a proliferation developed also in the wall. The chronic inflammation in the surroundings of the cavern and the exacerbation of the tuberculous process caused a still more intense development and thus a neoplasm formed. On the basis of only two case reports, the author does not feel justified to draw final conclusions about the significance of chronic inflammations in the development of primary pulmonary cancers.

Combination of Cancer and Pulmonary Tuberculosis.—According to Derischanoff, a combination of cancer and pulmonary tuberculosis is comparatively frequent. The two diseases do not counteract each other, but when cancer and tuberculosis exist in the same lung it is usually difficult to find tuberculous changes in the bronchi because the tumor tissues separate the tuberculous process from the bronchi so that bacilli do not enter the lumen. Old fibrous tuberculosis, as a chronic irritant, promotes cancer formation. The cancer in turn reduces the resistance of the organism and thus activates the tuberculosis. In the majority of cases the two conditions are localized in the same lung, and the other lung remains unimpaired. However, the processes do not remain localized but their metastases attack generally the same organs. The cancer tissue is destroyed by the tuberculosis, like every other tissue.

Zentralblatt für Chirurgie, Leipzig

59: 993-1040 (April 16) 1932

Use of Dry Suture Material. H. Boit.—p. 993.
Syphilis of Parotid. K. Ebhardt.—p. 995.
*Surgical Therapy of Gastric and Duodenal Ulcers with Especial Consideration of "Resection for Exclusion." O. Hoche and G. Marangos.—p. 998.
Infusion of Type Specific Serum. H. Kunz.—p. 1003.
Serotherapy of Gas Gangrene. E. Unger.—p. 1006.
Bilateral Ureterolithiasis. E. Friedländer.—p. 1011.
Treatment of Elephantiasis Nostras of Lower Extremity. A. Pop and I. Muresan.—p. 1015.
Method for Prevention of Intestinal Distention Following Abdominal Operations. K. Vogel.—p. 1018.
Remarks to Lexer's Paper on Adjustment of Articular Surfaces of Tibia by Elevation by Means of Bone Wedges. S. Zimmer.—p. 1021.

Surgical Therapy of Gastric and Duodenal Ulcers.—Hoche and Marangos mention the various surgical methods for the treatment of gastric and duodenal ulcers and give a tabular report of the methods that they themselves employed in 115 cases. They discuss particularly the treatment of the nonresectable duodenal ulcers, for which some authors advise "resection for exclusion," while others recommend gastroentero-anastomosis. The tabular report shows that the authors performed resection for exclusion in ten instances, and gastroentero-anastomosis in seven cases. This shows that they do not follow hard and fast rules but adapt the treatment to suit the case. Because the resection for exclusion is at present the focus of discussion, they give brief clinical histories of the ten cases in which this treatment was resorted to. The operation usually revealed an ulcer low down on the duodenum, which penetrated into the pancreas. In all cases the two thirds resection of the stomach and the resection of the pylorus was done. Prepyloric section of the antrum was never done, but the pylorus was always removed. The duodenum was resected close to the ulcer. Thus the author's method of resection for exclusion differs considerably from the simple exclusion of the pylorus and also from the usual method of exclusion for resection, since it is much more radical and removes the pylorus as well as two thirds of the stomach. After-examinations revealed that this method of treatment gives satisfactory results. The authors do not wish to discredit radical resection, but they emphasize that the resection for exclusion is advisable only for cases of ulcer deep down on the duodenum in which a radical operation does not seem feasible.

Zentralblatt für Gynäkologie, Leipzig

56: 961-1024 (April 16) 1932

Recent Results of Irradiation Therapy of Carcinoma of Uterus. F. Voltz.—p. 962.
Pregnancy Reaction on Ovary of Infantile Rabbit: Simplification of Hormonal Diagnosis of Chorio-Epithelioma. C. Clauberg.—p. 964.
Sizes and Weights of Fetuses in Earlier Months of Pregnancy. A. Gengenbach.—p. 972.
Testing Ecbolics by Registration of Uterine Movements of Cows During Puerperal Period. F. Benesch.—p. 975.
Clinical Aspects of Positio Facialis Mentosacralis. W. Walz.—p. 983.
Development of Lithopedion. F. Emmert.—p. 987.
*Ruptures of Uterus Resulting from Administration of Ecbolics During Period of Dilatation. S. Sztehlo.—p. 989.
Operative Repair of Complete Tear of Perineum. L. Hintzen.—p. 992.
*Dangers of Soap Enemas. R. Hubert.—p. 993.

Rupture of Uterus.—Sztehlo reports two cases of rupture of the uterus. The clinical histories show that the use of ecbolics during the period of dilatation involves certain dangers. In the first case the rupture followed the injection of an ecbolic, probably because the fetal head had deviated from the pelvic inlet. The rupture followed the steadily increasing uterine contractions. In the second instance the cause of the rupture could not be determined with certainty, for the patient had undergone several difficult deliveries and it is possible that the cervical scar may have ruptured without the injection of an ecbolic, yet it is also possible that the rupture resulted from the uterine contractions induced by the ecbolic. Because of the danger involved in the use of ecbolics during the period of dilatation, the author advises precaution. He thinks that hypophyseal extracts should be used only during the period of expulsion.

Dangers of Soap Enemas.—Hubert calls attention to the fact that the use of soap for enemas is quite common. Particularly midwives often give soap enemas before or after delivery. There are also reports about severe corrosions of the genitalia resulting from the use of soap as an abortifacient. In the majority of cases the use of a soap enema causes no lasting injury, but that there is a possibility of a severe corrosion of the rectum the author shows by reporting the history of a woman, aged 26. After an enema with soap water there followed a rectal hemorrhage. Rectoscopy revealed that the rectal mucous membrane was reddish and swollen. The condition became steadily more severe and the patient died. The author reports the results of the necropsy and cites factors that are evidence against a bacterially caused dysentery and for the causal significance of the soap enema.

Polska Gazeta Lekarska, Lwów

11: 249-268 (April 3) 1932

*Atypical Forms of Epidemic Encephalitis. E. Artwiński.—p. 249.
Biologic Assay of Adenine Derivatives Contained in Tissue Extracts and Preparations. J. K. Parnas and P. Ostern.—p. 250.
New Method for Determination of Time of Blood Coagulation. B. Szabuniewicz.—p. 251.
Case of Hemoglobinuria in a Child That Ingested Vaccinium Uliginosum. H. Frenklowa.—p. 255.
*Respiratory Disturbances and Their Mechanism in Various Clinical Forms of Dyspnea. M. Fejgin.—p. 256.

Atypical Forms of Epidemic Encephalitis.—Artwiński observed three cases of epidemic encephalitis during 1931. The first one was similar to schizophrenia, with distinct negativism and mutism. The second one resembled febrile dilirium by excitement, by hallucinations and by loss of senses of time and space. The author emphasizes the possibility of occurrence of atypical forms of epidemic encephalitis beyond the period of epidemic of this disease. Such atypical cases may be accompanied by marked psychic disturbances. Besides atypical also typical forms still occur, which are identical with those observed during the great epidemics.

Mechanism of Respiratory Disturbances.—Dyspnea, according to Fejgin, may be caused by chemical changes in, or near to, the respiratory center in the medulla oblongata. It

may also be the result of changes in the whole organism, caused by disturbed circulation. Pathologic processes in the lungs, such as tumors and inflammations, cause dyspnea by limiting the respiratory surface of the lungs. At times, narrowing or obstruction within the bronchi or larynx is responsible for dyspnea, as in bronchial asthma and diphtheria. In the latter instances the insufficiency of oxygen supply and of oxidation in the arterial blood causes faulty oxidation of the acid products of metabolism. This again tends to acidify the blood, which stimulates the respiratory center to increased activity and overventilation of the lungs. The mechanism is different when dyspnea is accompanied by insufficiency of the circulation. Here the deficiency of oxygen leads to acidification of the tissues and thereby to stimulation of the respiratory center. In other words, dyspnea with acapnial alkalosis is the result of anoxemia of the respiratory center, while dyspnea with acidosis is a symptom of general anoxemia, caused by advanced disturbance of the circulation and of the exchange of gases in the lungs.

Warszawskie Czasopismo Lekarskie

9: 145-168 (Feb. 18) 1932

Melody of the Heart (C'tn.). A. Rytel.—p. 145.
*Etiology of Agranulocytosis (Tuberculosis of Bone Marrow). M. Iberbein.—p. 148.
Treatment of Whooping Cough by Specific Vaccine. S. Kramsztyk.—p. 152.
Blood Coagulation and Serologic Phenomena (C'cn.). H. Makower.—p. 152.
Ethics and Medical Ethics. Z. Srebrny.—p. 163.
On Hygiene and Occupation of Hygienist (C'cn.). M. Kacprzak.—p. 164.

Etiology of Agranulocytosis.—Iberbein describes an agranulocytic syndrome which appeared during the course of pulmonary tuberculosis in a child aged 8 years. As a result of spreading of the tuberculous process by way of the blood stream, infection of bone marrow took place. Injury to the granulocytopoietic system by Mycobacterium tuberculosis followed. This led to the appearance of the agranulocytic syndrome.

Sovetskaya Vrachebnaya Gazeta, Leningrad

Feb. 15, 1932, number 3, pp. 129-192

Intestinal Protozoa and Their Clinical Significance. A. A. Filipchenko.—p. 131.
Course and Prophylaxis of Purulent Pleurisy of Children. A. Petryaeva.—p. 135.
Recognition of Functional Presystolic Murmurs. B. I. Trusevich.—p. 140.
Acute Septic Tonsillitis. A. Kh. Minkhovskiy.—p. 143.
Blood Picture in Various Forms of Exophthalmic Goiter. E. I. Galperin and I. Ya. Sosnovik.—p. 145.
*Murata's Ring Test in Serodiagnosis of Syphilis. O. N. Zepalova.—p. 149.

Murata's Ring Test in Serodiagnosis of Syphilis.—Zepalova studied the ring test of Murata, in which the antigen is a cholesterolized extract of ox heart prepared according to the method of Nagayo and Nobechi. In summary, the test consists of layering small quantities of inactivated serum with titrated antigen which has been diluted with physiologic solution of sodium chloride (1:10) and mixed for ten minutes not earlier than one hour previously. The test is read after forty-five minutes and again after two to three hours; it is considered positive when there is a white ring at the point of contact of the serum and antigen. The author examined 1,244 serums by this method, checked by the Wassermann and also one other test: these included serums from persons with undiagnosed syphilis and other conditions (pregnancy, chancroid, gonorrhea, tuberculosis). In 95.82 per cent (534 positive and 658 negative) this test coincided with the recognized tests for the diagnosis of syphilis. The author concludes that the test is highly specific and is comparable to the Kahn and the Wassermann test.

Feb. 29, 1932, number 4, pp. 193-256. Partial Index

Prophylaxis in Intestinal Diseases of Children. M. Danilevich.—p. 195.
Immunizing Properties of Specific and Nonspecific Phases of Paratyphoid Group of Bacteria. V. Berman and I. Rogozin.—p. 199.
Vitaminogen (A, B, C, D) in Diagnosis, Prophylaxis and Therapy of Evident and Latent Avitaminosis in Laboratory and Clinic. I. A. Golyanitskiy.—p. 205.
Therapy in Postpuerperal Period. M. I. Litvak.—p. 209.
Indication for Operation in Acute Appendicitis. A. P. Nadein.—p. 212.
Cranial Sounds of Venous Origin. V. A. Krikova and A. V. Drojennikova.—p. 214.
Action of Camphor on Cardiovascular System. E. I. Speranskaya-Stepanova.—p. 216.
Action of Various Plant Substances on Secretion and Excretion of Bile. M. K. Petrova and S. M. Riss.—p. 218.
Influence of Morphine on Diuresis. G. D. Derchinskiy and E. N. Speranskaya-Stepanova.—p. 220.
*Subcutaneous and Local Vaccination Against Typhoid. V. G. Yaremenko.—p. 222.
*Treatment of Psoriasis by Injection of Scales. D. A. Elkin.—p. 223.
Determination of Chlorides in Urine Using Votoček's Method. S. R. Mardasheva.—p. 243.

Subcutaneous and Local Vaccination Against Typhoid.—Yaremenko undertook to determine the relative immunizing properties of typhoid vaccine administered by the subcutaneous and the enteral routes. Guinea-pigs of approximately equal weight were divided into four groups. The first two groups were vaccinated subcutaneously with vaccines treated with formaldehyde and phenol, respectively; the other two groups were vaccinated by mouth with the same vaccines. The author concludes that in respect to immunizing properties, antibodies, and protection against lethal doses, the enteral route is not as efficacious as the subcutaneous route. In spite of the larger agglutinative titer of the serum when the vaccine treated with formaldehyde is used, the vaccine treated with phenol guarantees greater protection against lethal doses (subcutaneous route); the two vaccines afford the same degree of protection when the enteral route is used. The subcutaneous route is not only more economical but more effective in immunizing *en masse* against typhoid. The enteral route should be used only when the subcutaneous route causes strong reactions.

Treatment of Psoriasis by Injection of Scales.—Elkin considers the treatment of psoriasis in the light of protein therapy in which keratin and the toxic cellular proteins lead to desensitization of the skin and at the same time stimulate the organism to the development of antibodies. Eight patients from 15 to 45 years of age were subjects for the study. From 1 to 2 cc. of a 1 per cent solution of the scales from psoriasis lesions were injected daily or every other day: two patients received injections of unsterilized scales mixed with physiologic solution of sodium chloride; two patients received injections of sterilized scales mixed with sterilized physiologic solution of sodium chloride, while the third group (nine patients) received injections of a 1 per cent mixture of scales in 96 per cent alcohol. (The scales, when autoclaved, were ground in a mortar first in a dry state and then with the addition of several drops of the diluent which was to be finally used to prepare 1 per cent mixtures.) In the first group (unsterilized scales) there was an increase in temperature, the local reaction was marked, and the therapeutic results were minimal. In the second group (sterilized scales) there was no local or general reaction, slight edema at the site of injection, and no perceptible therapeutic effect. The third group (alcoholic solution of scales injected intramuscularly—in the first two groups the injections were given subcutaneously), which received from fifteen to seventeen injections (six patients) and from six to eleven injections (three patients), showed comparatively insignificant local reactions; the pain increased markedly in the first twenty minutes and then slowly subsided; the local reaction disappeared entirely within twenty-four to thirty-six hours and improvement followed. One patient in the last group recovered completely within one month and the other eight showed various degrees of improvement with blanching of the patches and decrease in the number of scales. The author concludes that treatment, consisting of injections of solutions of scales from psoriasis lesions in 96 per cent alcohol, has a therapeutic effect in some cases but cannot be recommended for general practice unless it is given under clinical conditions.

Vrachebnoe Delo, Kharkov

14: 1121-1256 (Nov. 30) 1931. Partial Index

*Gaseous Emboli in Right Side of Heart in Course of Artificial Pneumothorax. E. D. Goldovsky.—p. 1136.
*Spontaneous Healing in Rupture of Gravid Uterus. V. M. Khmilivsky.—p. 1166.
*Clinical Aspect and Therapy of Pyuria in Nurslings. S. V. Rodkin and D. D. Kaganov.—p. 1170.

14: 1257-1392 (Dec. 31) 1931. Partial Index

*Clinical Aspect and Therapy of Pyuria in Nurslings (C'cn.), S. V. Rodkin and D. D. Kaganov.—p. 1279.

Gaseous Emboli in Heart in Artificial Pneumothorax.—Goldovsky states that gaseous emboli and pleural shock are not infrequent during artificial pneumothorax. He reviews the

literature, discusses a personal observation, and concludes that distant "mill-like" cardiac murmurs in patients with artificial pneumothorax should lead one to consider gas in the right side of the heart. This phenomenon is designated by one worker as gallop rhythm. Besides this mill-like rhythm there probably are still other symptoms of gaseous embolism of the right side of the heart which are still unrecognized. During the course of the treatment with artificial pneumothorax, and in the presence of murmurs bringing to mind friction rubs of the pericardium, one must not forget that murmurs due to pleural friction may be the beginning of gaseous emboli. According to observations from the literature, gaseous emboli of the right side of the heart during artificial pneumothorax are not highly dangerous, whereas the mortality from emboli in the left side of the heart is high and these emboli should be accorded more consideration than they have received in the past.

Spontaneous Healing in Rupture of Gravid Uterus.—Khmilivsky states that his own observations and a review of the literature indicate that rupture of the uterus during pregnancy and delivery occurs in the proportion of 1 to 2,017. Rupture of the uterus occurs more often in the second period than in the first period of pregnancy, more often in the multipara than in the primipara, and more often in the poor, village and working woman. Spontaneous healing in rupture of the gravid uterus occurs seldom. Spontaneous healing can occur either through encapsulation of the fetus or of the parts lying in the abdominal cavity, by suppuration and then egress through the suppurating fistulas. After spontaneous healing a woman can hardly be physically fit, although she may appear to be so, since encapsulated pieces of fetus have remained in the abdominal cavity. A suppuration begun in the fetus can continue for five years. The fetal fragments that remain in the abdominal cavity must be removed surgically. Spontaneous healing in rupture of the uterus in the broad sense of the term does not occur.

Therapy of Pyuria in Nurslings.—The material of Rodkin and Kaganov consisted of seventy-two cases of pyuria in nurslings from the age of 1 month to 2 years (fifty-four were in the first year of life and 73.5 per cent were girls). Their observations were as follows: Pyuria was found together with influenza in thirty-four patients and with severe nutritional deficiencies in twenty-four patients. There was little proof in favor of Birk's exudative diathesis. In regard to symptomatology, it was found that the pyuria was so closely associated with the fundamental disturbance that no particular symptoms could be attributed specifically to the pyuria. The diagnosis is based on examination of the urine. The chief symptoms are increase in temperature, loss of appetite, vomiting and pallor. The body temperature is usually subfebrile (twenty-six cases) or irregular (twenty-eight cases); five patients had normal temperatures. There was often a discrepancy between the character and the height of the temperature curve on the one hand and the severity of the disease on the other hand. The leukocyte count did not seem to be of value in the prognosis or diagnosis, whereas the neutrophils were increased. Deviation of the blood picture to the left was most marked in disturbances with a bad prognosis. The mortality (mostly in the first six months) was 22 per cent. In view of the results reported in the literature and their own observations, the authors believe that treatment should be aimed at a general and not at a local disturbance. There are no specific medicinal agents or methods for treatment. The only rational course in prophylaxis and treatment is to be aimed against chronic and acute disturbances in nutrition. To increase the bodily resistance, control of the diet and plenty of fresh air are necessary.

Finska Läkaresällskapets Handlingar, Helsingfors

74: 119-222 (Feb.) 1932

*Late Results in Tuberculous Spondylitis Treated with Operative Fixation, Mainly According to Albee. F. Langenskiöld.—p. 128.
Erythema Nodosum and Tuberculosis. H. Ernberg.—p. 164.
Peroral Cholecystography. G. Jansson.—p. 179.

Tuberculous Spondylitis Treated with Operative Fixation.—Langenskiöld reports fifty cases in patients over 15 years and sixteen in patients under 15 years of age. He concludes that in adults operative fixation of the spine in tuberculous spondylitis entails so slight a risk and offers so marked an advantage for the patient that the procedure may be recommended as a normal method, to be rejected only in case of special contraindications. In children the operative risk is greater, the results more uncertain, and the advantage definitely less; here he would reserve operative treatment for selected cases in which nonoperative treatment does not hold out hope of recovery without kyphosis.

Ugeskrift for Læger, Copenhagen

94: 349-370 (April 7) 1932

*Injection Treatment of Gonorrheal Urethritis in Men. S. Lomholt.—p. 349.
*Injection Treatment of Varices: Immediate Results; After-Examinations. K. Kettel.—p. 356.

94: 371-398 (April 14) 1932

*Injection Treatment of Gonorrheal Urethritis in Men. (C'tn.) S. Lomholt.—p. 371.
Some Cases of Congenital Syphilis. C. Schwensen.—p. 378.
Tire-Tread Marks. K. K. Ortmann.—p. 380.
Partial Cheiloplasty and Transplantation from One Person to Another. E. Dujardin.—p. 382.
Automatic Pipet. V. Møller-Christensen.—p. 383.

Injection Treatment of Gonorrheal Urethritis in Men.—Lomholt emphasizes the importance of thorough and careful lavage of the urethra or, in cases of injections, that three or four should be given during each treatment, partly because of the difficulty in bringing the injected solution into effective contact with the entire mucous membrane on one injection. He asserts that even the shortened injection period of from three to five to ten minutes now employed by most physicians can be further reduced to from one half to one minute without loss of effect, as the main portion of the injected silver will in this time be changed to but slightly active silver chloride. This holds unconditionally for silver nitrate and to a marked degree for strong silver protein. The reduction in the time of treatment is of great assistance in the performance of the treatment. The concentration chosen should be such as will produce a mild reaction in the mucous membrane, every more pronounced irritation being avoided.

Injection Treatment of Varices.—Kettel's material comprises 629 patients treated, with after-examination in 421. The immediate results of injection treatment in uncomplicated varices showed 94.5 per cent to be without symptoms and 2.5 per cent definitely improved without the use of compression bandages. In patients with eczema, the treatment was usually ineffective. After one year 91.5 per cent were without symptoms, with recurrence, however, in one third. After at least five years one third continue free from symptoms and one third are definitely improved without the use of compression bandages. Healing occurred in seventy-two out of ninety-four patients with ulcer. After-examination from one to five years later showed continued healing in fifty-two. The author considers injection treatment superior to operative treatment.

Upsala Läkareförenings Förhandlingar, Uppsala

37: 215-309 (March 30) 1932

Iron Metabolism in Normal Breast-Fed Infants During First Year of Life. A. Wallgren.—p. 215.
*Renal Tuberculosis and Pregnancy. H. Naeslund.—p. 243.
Cystinuria in Sweden. C. T. Mörner.—p. 295.
Case of Aplasia of Left Parotid Gland. G. Thorsén.—p. 303.
Rare Anomaly of Supraclavicular Nerve (Perforation of Clavicle). O. Ahlborg.—p. 307.

Renal Tuberculosis and Pregnancy.—The results of Naeslund's investigations in the twelve cases reported afford confirmatory evidence that pregnancy exerts a harmful effect on bilateral renal tuberculosis. In unilateral renal tuberculosis after nephrectomy the function of the remaining kidney may also be affected by gravidity, particularly after delivery. In these cases the kidney function must be closely followed by kidney function tests during pregnancy, in order, if it becomes necessary, to terminate the pregnancy betimes.

CORRECTION

Convulsions in Infancy.—In the abstract of the article by Dr. Stanley Graham from the *Glasgow Medical Journal* in THE JOURNAL, June 18, page 2250, the metric equivalents of the dosage of chloral hydrate should have been as follows: 2 to 4 grains, 0.13 to 0.26 Gm.; 5 grains, 0.3 Gm.; 1 grain, 0.065 Gm.